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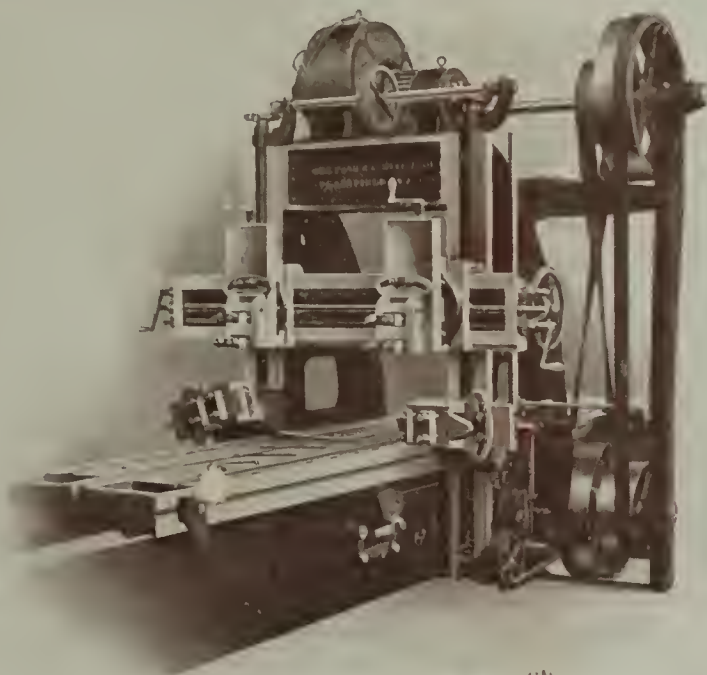
Vol. LVI.

NEW YORK, JUNE 1, 1905.

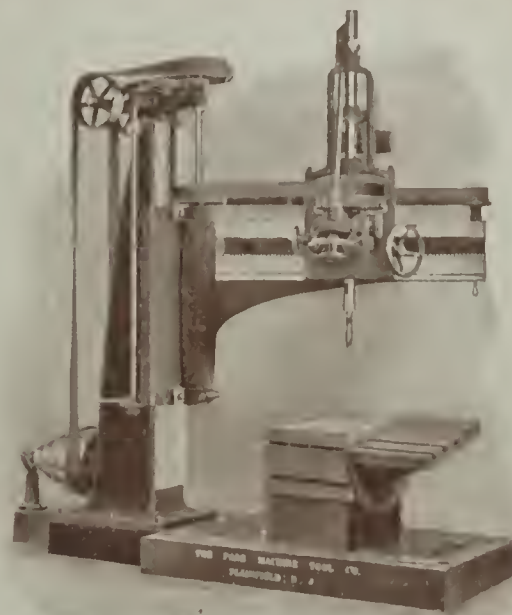
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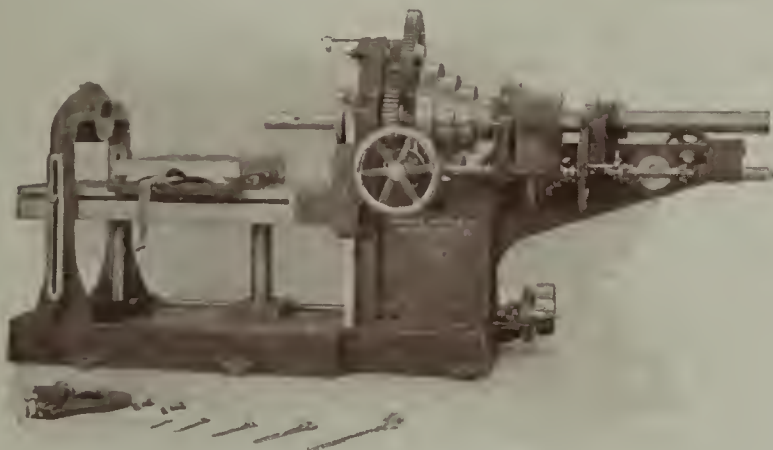
800-POUND STEAM HAMMER.



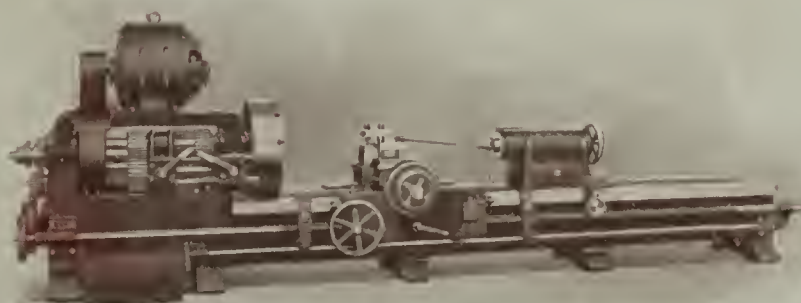
42-INCH FORGE PLANER.



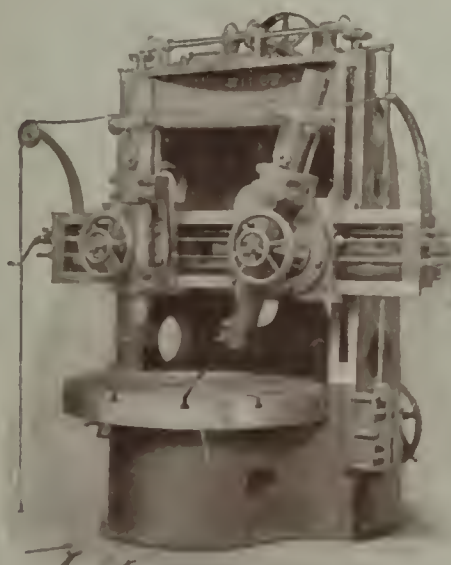
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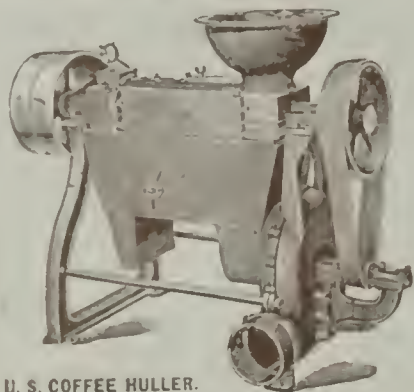
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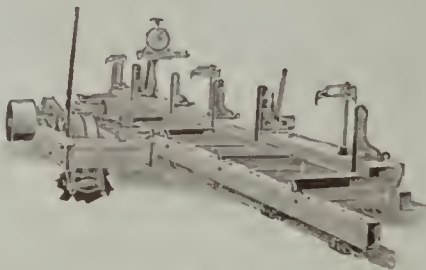
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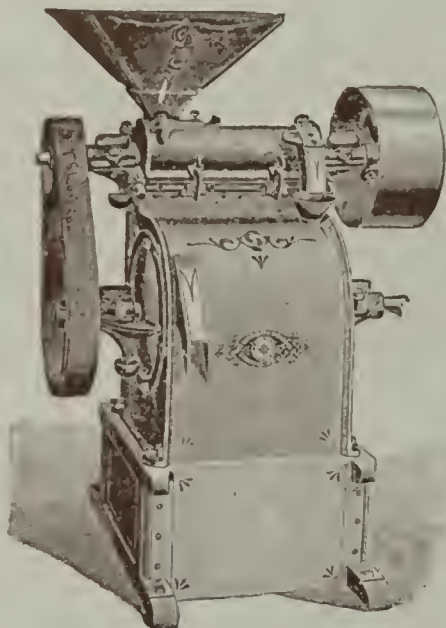
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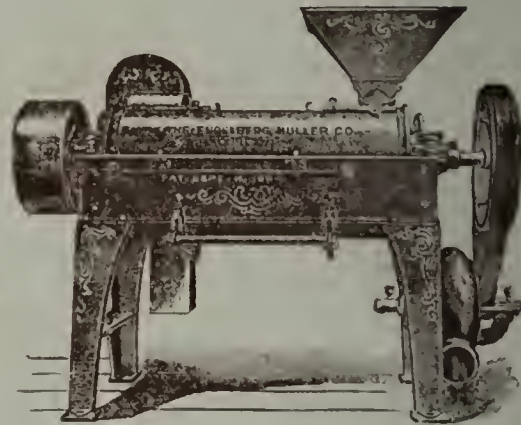


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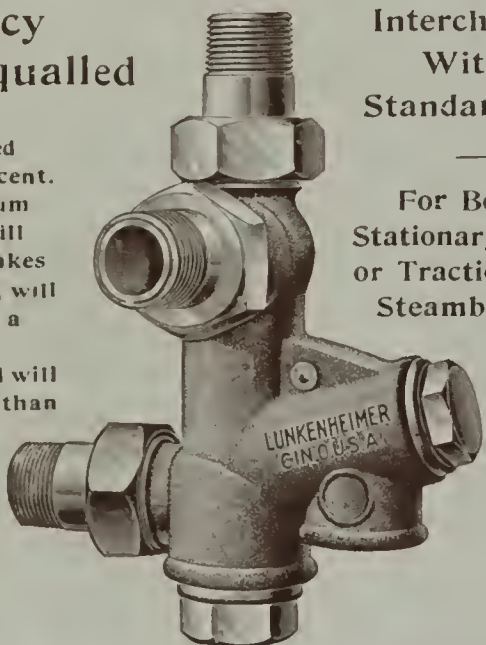
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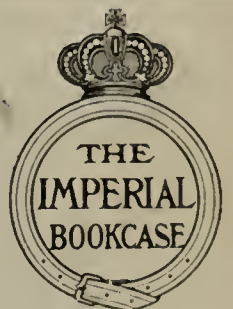
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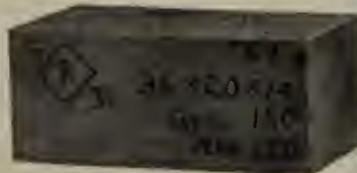
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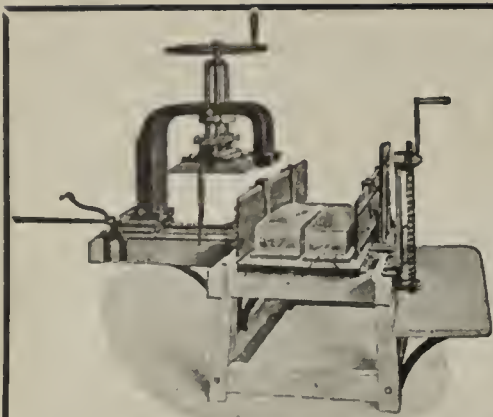
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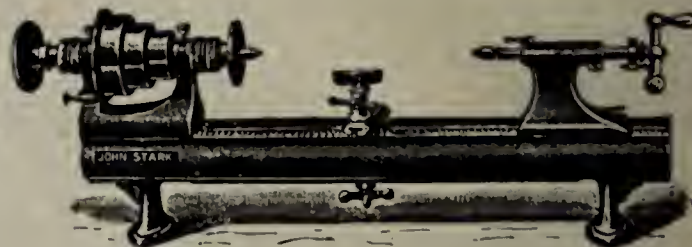
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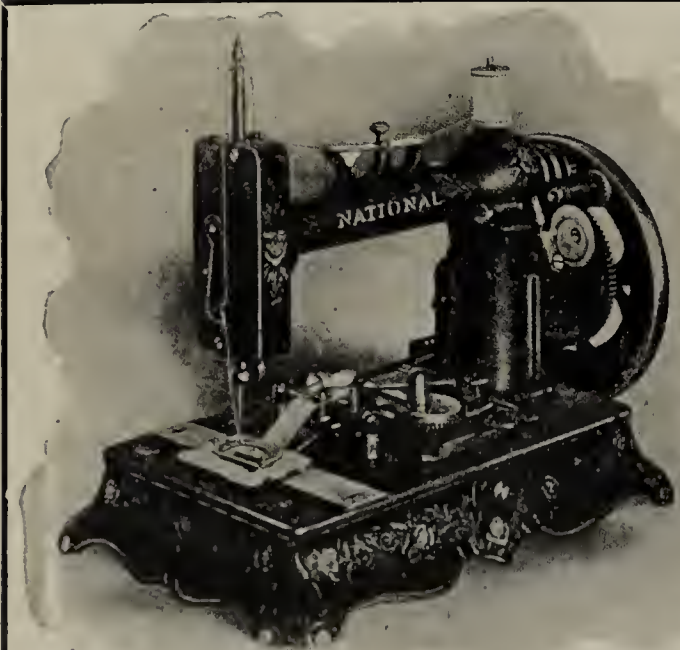
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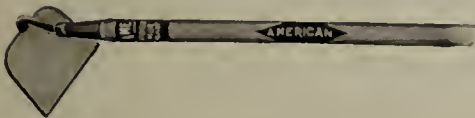
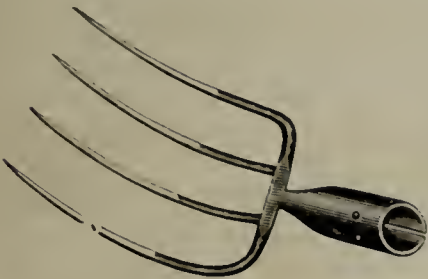
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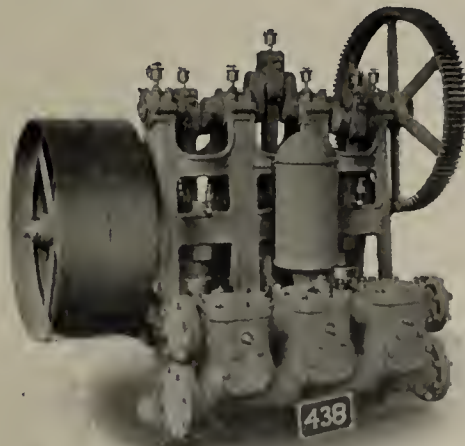
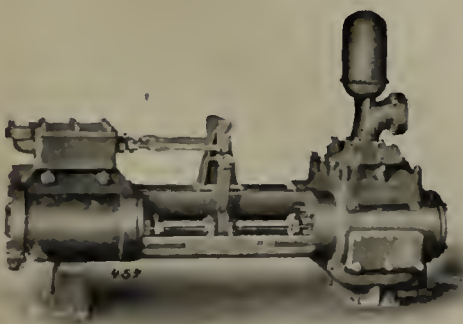
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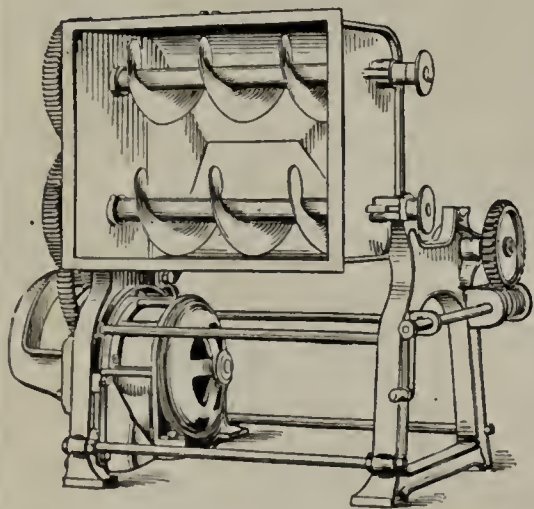
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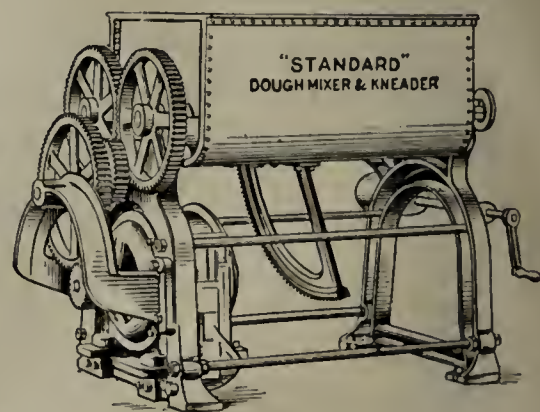
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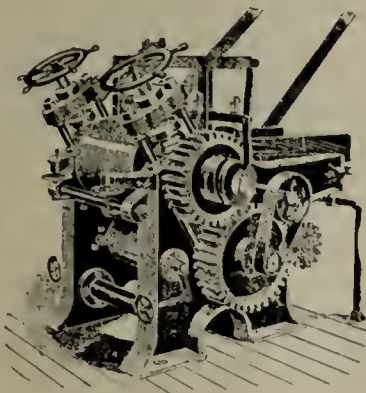
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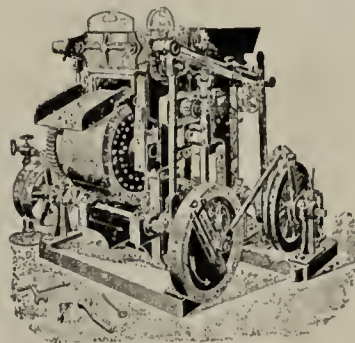
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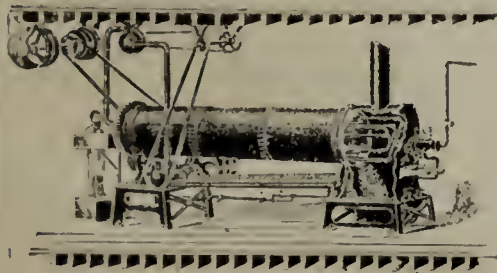
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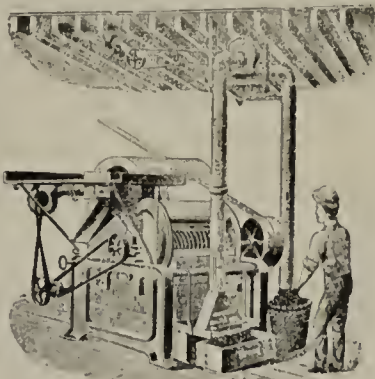
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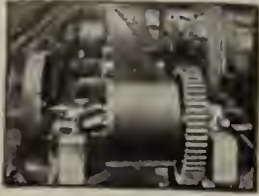
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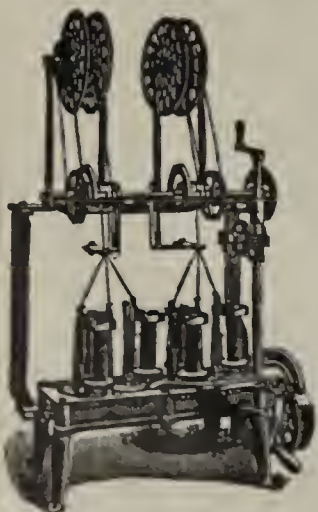
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Write us for our handsomely and fully illustrated catalogues, which give complete information regarding nearly every style and kind of vehicle that we manufacture. Where possible, specify the class of vehicle you intend purchasing. Please let us hear from you.

Very truly yours,

STUDEBAKER BROS. CO. of New York.

Wm. R. Innis, General Manager.

The Keystone GOLD-FINDER and Blast-Hole Driller



Grand Prize Awarded
at World's Fair.

Makes an 8-inch hole through any formation, to any depth, and brings everything to the surface. Used for assaying Alluvial Deposits, Lake and River Beds, etc., ahead of dredges.

Adapted for drilling large Blast Holes in Tight Placers.

Many sizes—Traction and Non-traction.

Our Vacuum Sand Pump is the only device assuring a perfectly accurate test for gold.

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KEYSTONE DRILLER CO., Eighth Ave., Beaver Falls, Pa., U. S. A.

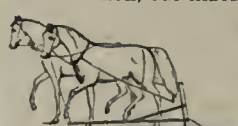
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Drill for Water, Prospect for Minerals.

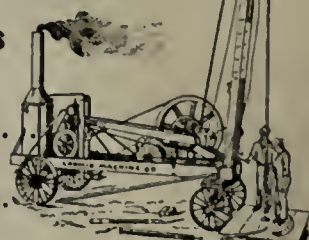
Drill Test and Blast Holes.

Coal,
Gas,
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We can meet every requirement from light horse and gasoline power to heavy steam power machines. For rapid work, great durability and simplicity of construction, our machinery



Leads
the
World.



Loomis Machine Co.

TIFFIN, OHIO, U. S. A.

SPLIT BAMBOO.

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STANDARD FISHING ROD COMPANY,

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Manufacturers of

500 DIFFERENT STYLES AND GRADES OF
FISHING RODS.

Sole Makers of the Celebrated

"Grover Cleveland" Fly and Bait Rods.

BUZZARDS BAY, MASS., August 6, 1903.

"It is by far the best and handsomest rod I ever owned, and I don't see how it can be improved."

GROVER CLEVELAND.

Catalog Mailed on Application.

LANCEWOOD.

GREENHEART.



AGENTS WANTED

In every country to handle our lines of BICYCLES. 1905 Models, highest grade, complete and fully guaranteed.

\$11.75 (£2.8.0) to \$24.00 (£4.18.4) NET.

We will ship sample Bicycles on approval to any part of the world on receipt of a deposit of \$5.00 (£1) each, or send full price to First National Bank, Chicago, or a reliable Commission House, New York, to be paid us when wheels are shipped.

We guarantee these Bicycles equal to the best \$30.00 and \$40.00 American machines. We have numerous agents in foreign countries who have built up a large and profitable business in our cycles. Send us an order for a sample bicycle, or write for catalogues and full particulars concerning shipments to your country.

Tires, equipment, sundries and sporting goods of all kinds at half usual prices. Ask for free "Sundry Catalogue."

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MEAD CYCLE CO., Dept. T 45, Chicago, U. S. A., and Liverpool, England.

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PITTSBURG PA

MANUFACTURERS OF

ALL KINDS OF SUPPLIES

FOR

OIL AND GAS WELLS.

Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
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Manila and Wire Rope,
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We furnish Complete Outfits ready for drilling.

We give careful attention to export orders.

Write for our 1901 Illustrated Catalogue.

FOREIGN DEPARTMENT OFFICES:

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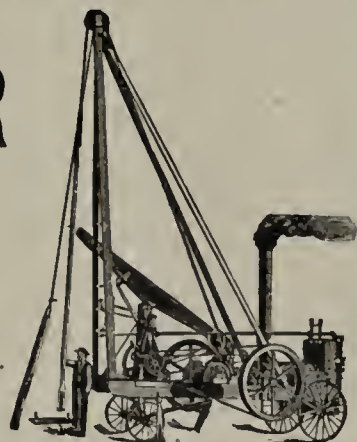
There may be valuable mineral, gas or oil on your property. It does not cost much to find out.

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THE PORTABLE

STAR DRILLING MACHINES

are the best ones ever put on the market. They are entirely without springs. Are simple and efficient.



L. F. Kelth, of Maryville, N. Y., says: "My three Star Machines have been giving perfect satisfaction. I have drilled 60 feet in rock in one day of 10 hours."

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The land belongs to you clear down to the center of the earth. Probably there is vast value deep under the surface that would pay well to develop.

Star Drilling Machines are Made In 10 Sizes, to Drill from 250 to 2500 Feet.

We also Manufacture Drilling and Fishing Tools.

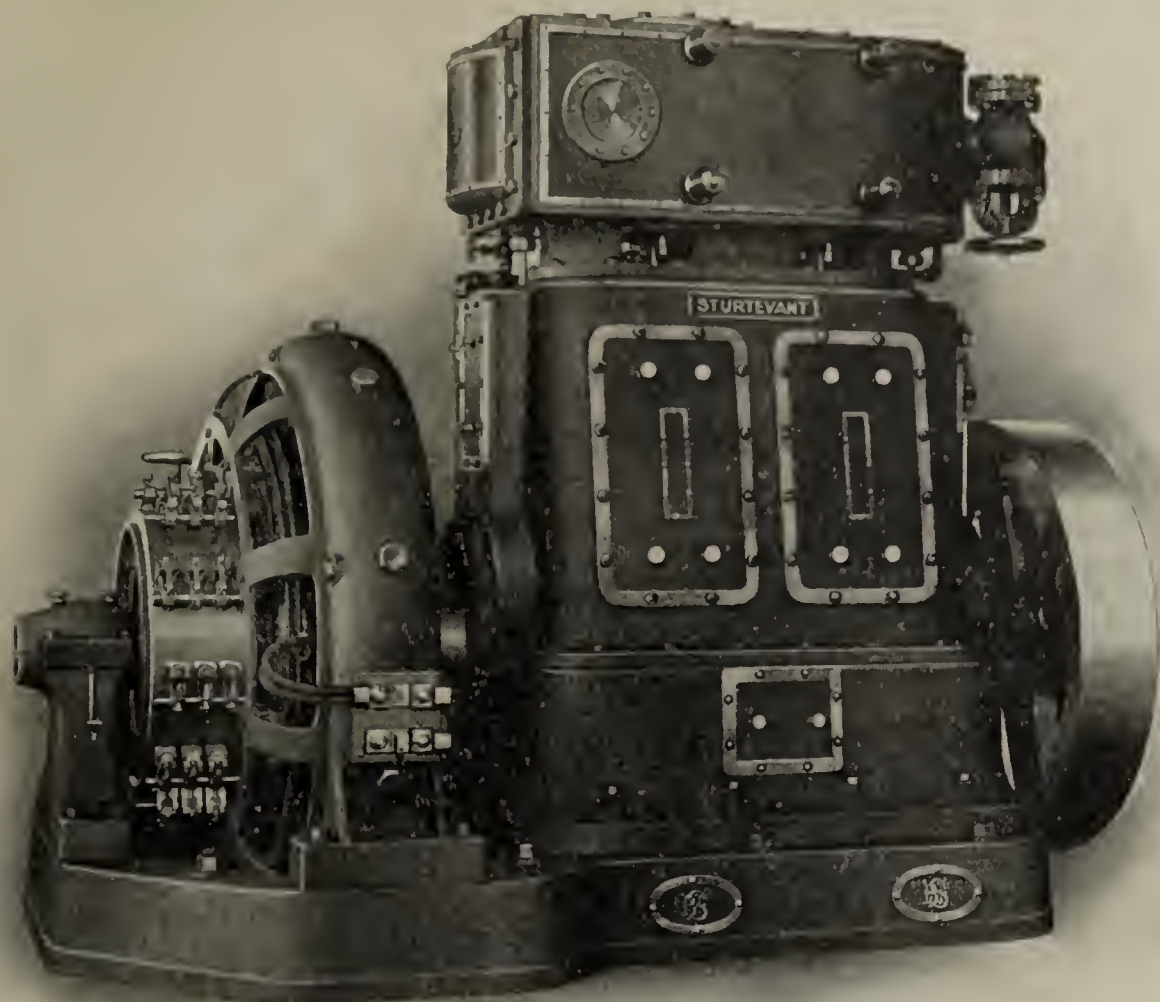
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STAR DRILLING MACHINE CO.

Akron, Ohio, U. S. A.

Cable Address: "STARDRILL."

Use "A-B-C Code, 4th Edition," or "Universal Code of Lieber."



For Isolated Lighting Plants

the **Sturtevant Generating Sets** are especially adapted because of their high efficiency and compact construction. These distinctive features of the type here shown were developed under the rigid specifications of the U. S. Navy Department. These sets are built in a line of five sizes, ranging from 17½ to 100 K.W., good for 320 to 1,820 16-candle-power lamps, respectively, at normal load.

A 100 K.W. generating set can be located in a space measuring less than 6 feet wide, 9½ feet long and 8 feet high, will operate at a combined efficiency of over 86 per cent., and will consume not exceeding 31 pounds of water per K.W. hour.

We also build 31 other sizes and styles of generating sets under 100 K.W. All but the largest can be delivered completely set up and ready for operation.

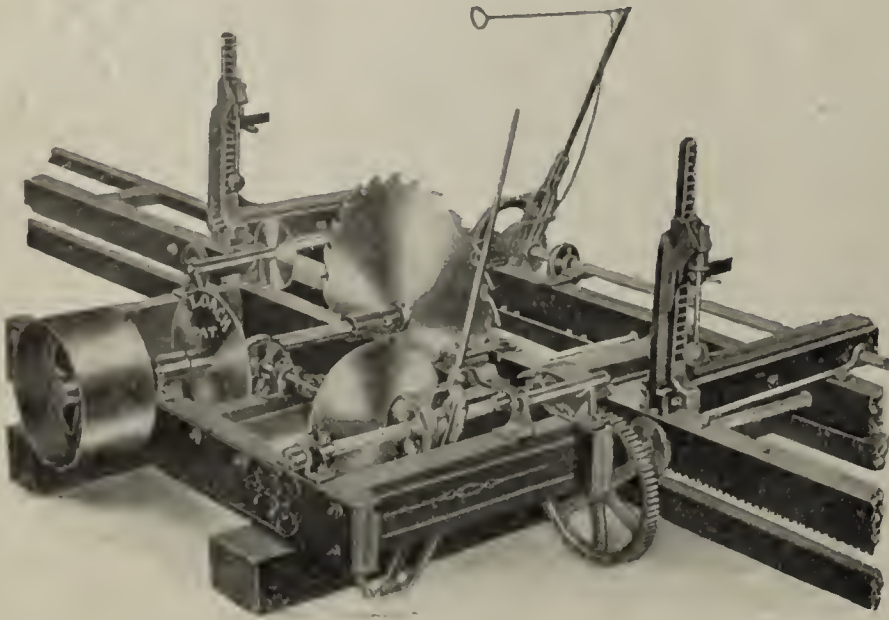
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BOSTON, MASS.

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, Etc.

De Loach Patent Saw Mills



Built by a concern that builds more saw mills than any three others in the world. Our leader is saw mills and kindred machinery, and "knowing how" enables us to build the best. We sell "satisfaction" as well as saw mills. De Loach Saw Mills do the most work with the least cost. Our guarantee backs up every claim we make. Vertical friction feed. All sizes, 4 H.-P. up to 200 H.-P. For all parts of the world.

Cut illustrates our No. 1 $\frac{1}{4}$ Saw Mill. For 4 to 20 H.-P. 2 3-16-inch mandrel. Carriage 37 inches wide, 18 feet long.

Send for our complete catalogue; it's free, and gives full information about De Loach Saw Mills—the best in the world.

HAY BALERS, FOR HAND, HORSE OR BELT POWER

4 Strokes to 1 Revolution of Driver; Rapid, Compact, Easy to Handle, Self-Feeding.

WE ALSO MANUFACTURE LATH, SHINGLE AND STAVE MILLS, PLANERS, EDGERS, BUHR MILLS, WATER WHEELS, ETC.

We Solicit Correspondence.

Prompt Attention Given to Orders for Export.

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HEATING



SANITATION

THE AMERICAN BOILER

FOR SMALLEST COTTAGE AND LARGEST BLOCK

Is but one of a large and varied line of Steam and Hot-Water House-Heating Boilers we are prepared to furnish those

EXPORT TRADE

Estimates on Heating and Sanitary Goods F. O. B. New York City

We manufacture and carry in stock, ready for export shipment, Boilers, Radiators, Baths, Lavatories, Closets, Portable Showers, Sinks and all kinds of Steam and Sanitary Supplies.

Make known your wants to us and we will be pleased to furnish you with catalogs and prices to meet your requirements.

PIERCE, BUTLER AND PIERCE MFG. CO., Syracuse, N.Y., U. S. A.

ONE OF THE OLDEST AND STRONGEST HOUSES IN AMERICA

FOR SCHIEREN BELTING



Only the best part of the best hides is used.

Tanned by the slow oak-bark process—more troublesome than the usual chemical methods—but it's the **ONLY WAY** to produce leather of great tensile strength and durability—the kind that stands hard service under unfavorable conditions.

Every other part of its manufacture has received the same careful and thorough attention by the most skillful workmen with improved and economical methods.

That's why **SCHIEREN BELTING** lasts longer, runs straighter, is better in every way than any other.

We have increased our Oak Leather Tanneries in the past ten years from a capacity of 50,000 heavy hides in 1893 to a capacity of 100,000 heavy hides in 1903; or 100 per cent. increase in ten years. Could there be a better testimonial to the worth of our product?

We also manufacture Belt Cement, Belt Lacings, Belt Dressing, Round Belting, Link Belting and Belting Accessories. Send for our Dixie Belt Leather Book. Special attention paid to export orders.



CHAS. A. SCHIEREN & CO.

32 CLIFF ST., NEW YORK, U.S.A.

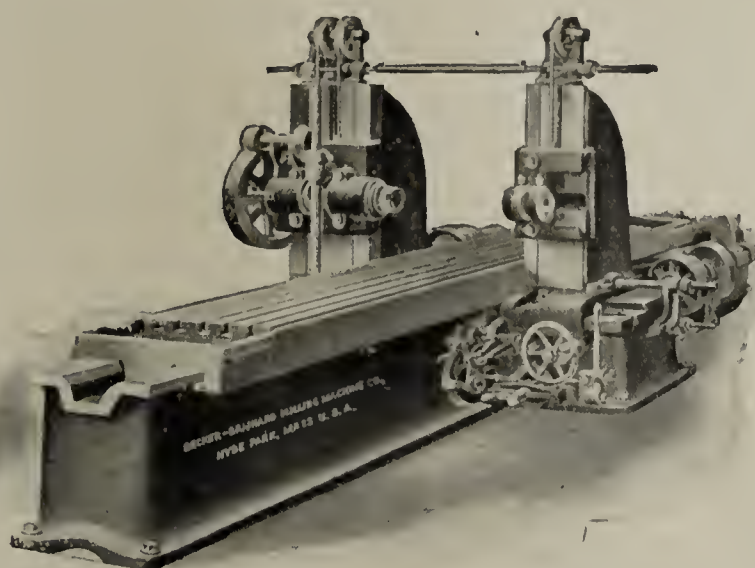


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MILLING MACHINES MILLING CUTTERS



No. 3 Plain Milling Machine.



26 in. x 32 in. x 10 Ft. Planer Type Milling Machine.



No. 5-B Heavy Milling Machine.



No. 7 Plain Horizontal Milling Machine.

Complete Line of
MILLING MACHINES
for Tool-Room and Manufacturing
Purposes.

Designed for rapid production.



Milling Cutters to meet every requirement.



No. 5-B Vertical Milling Machine.



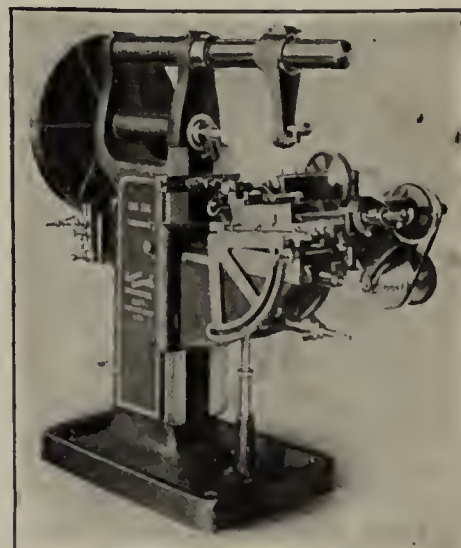
No. 1 Cutter Grinder.

Write for Catalogue

Or let us suggest most economical method of
milling your work.

Becker-Brainard
Milling Machine Co.

HYDE PARK, MASS., U. S. A.



36-In. Automatic Gear Cutter.

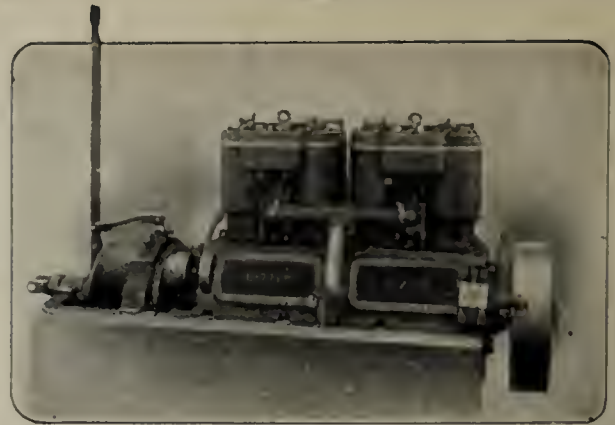


Motors, \$200 to \$3,000. Boats, \$400 to \$25,000.
Automobiles, \$4,000 to \$8,000, 5 to 7 Passengers.

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MOTOR BOATS, MARINE GAS ENGINES, MOTOR CARS.

Motors, Two-Cycle, 3 to 10 H. P.
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Lozier 4-Cycle, 20 H. P. Gasoline Engine.

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Catalogues on application, postpaid to all parts of the world. Write for discounts.

Cable Address: LOMOCO, New York.

Lieber, Western Union, A1, A B C, 4th and 5th Editions, and Private Codes.

Aluminum Smokeless Oil Heaters

Equipped with Safety Burner.

**SPECIAL
\$35.00
OFFER
FOR FOREIGN
MARKETS:**

Upon receipt of \$35.00 in U. S. Gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29½.



- No. 1—Brass burner; removable fount; 8-in. circular wick; height (ball down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular wick; height (ball down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (ball down), 28 inches.

OUR SAFETY BURNER. Note Construction.



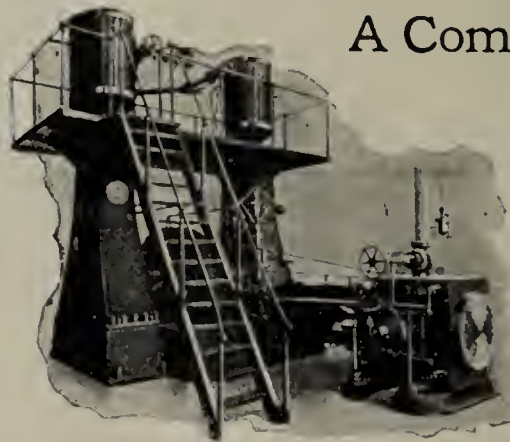
- A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

Metal Stamping Co., Jackson, Mich., U. S. A.

A Combination With a Reputation



The results of years of experimenting and carefully kept records are all embodied in the justly famous

YORK

Ice-Making and Refrigerating Machinery and Ammonia Fittings.

You get the benefit of this experience in every product of our works you buy. Use it—

don't experiment. Let us prove our claims. Write for catalog K, giving partial list of installations.

YORK MFG. CO., MAIN OFFICE AND WORKS, YORK, PA.
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FOREIGN AGENTS: Arthur E. Enock & Co., 406-9 Birkbeck Bank Chambers, Holburn, London, W. C. South African Address: Box 471, Durban, Natal.

United States Washing Machine Co.

Successors to INTERNATIONAL MFG. CO.

MANUFACTURERS OF

GALVANIZED STEEL WASHING MACHINES.

Being made of Galvanized Steel is the only washing machine that will not warp, rust or be affected by climatic changes. Absolutely germ-proof and perfectly sanitary.

SPECIAL EXPORT OFFER:

Upon receipt of \$11.00 in U. S. Gold or its equivalent, we will crate (K. D.), ready for transportation abroad, and deliver f. o. b. New York,

2 United States Galvanized Steel Washing Machines.

Each machine occupies six cubic feet, and weighs seventy-two pounds.

Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

UNITED STATES WASHING MACHINE CO.

1542 JUNCTION AVENUE, RACINE, WISCONSIN, U. S. A.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

THE **Guarantee**

FOUR-STROKE ROTARY

Washing Machine

Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine and more.

NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.

FOR TWENTY DOLLARS

In U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.

NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.



GUARANTEE WASHER.



GUARANTEE WASHER.



QUALITY and PRICE

are the first considerations when making a purchase.

Both these essentials are contained in the

Schroeder

1904 MODEL

Roller Gearing,
Rotary Washer.

Lightest to operate. Best construction. Made from Louisiana red cypress wood. Handsomely finished in rose-wood color.

Furnished with detachable legs, precisely as illustrated. We also manufacture the "B. B." and "Brammer" Rotaries, also several styles of Lever Washers—round or square. Write us for further particulars.

**BENBOW-BRAMMER
MFG. CO.,**

The Pioneer Washing
Machine Manufacturers,
ST. LOUIS, MO., U.S.A.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



• WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is $2\frac{1}{2}$ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of Thirty dollars (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, Six (6) White Lily Washing Machines.

Weight, 600 lbs. Measurements: 19x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.



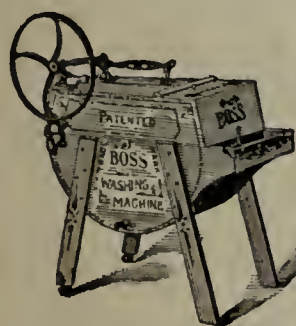
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Made for the Moneys of All Nations.
LATEST MODEL KEY-OPERATING
CHECK AND STRIP PRINTING.

Shipping weight, net 98 lbs. (44 kil.); gross, 150 lbs. (68 kil.); 6.1 cu. ft. (172 cu. met.). Order direct or through any reliable exporter. Discounts on application.

Manufactured by

Union Computing Machine Company,
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Cable Address: "Computico, N. Y."



"BOSS" Line of Clothes Washing Machines

Will cleanse any fabric quick and without the slightest injury. These machines are a

NECESSITY WHEREVER CLEAN CLOTHES
ARE DESIRED.

It will pay you to secure our catalogue and price-list before placing your order elsewhere.

MANUFACTURED BY

BOSS WASHING MACHINE CO.

CINCINNATI, OHIO, U. S. A.

Largest Manufacturers in the World of Clothes
Washers.



AWARDED GOLD MEDAL at WORLD'S FAIR, ST. LOUIS, for BALL-BEARING WASHING MACHINES

COST: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at \$6.62 $\frac{1}{2}$ =\$26.50.

SELLING PRICE: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at \$14.00=\$56.00.

Net Profit Over 100 Per Cent.



FOREIGN MARKETS ONLY. Upon receipt of \$26.50 in U. S. Gold, or its equivalent, we will pack, ready for transportation abroad, and deliver f. o. b. New York, Boston, Philadelphia or Baltimore.

Two "1900" and Two "1900" Junior Ball-Bearing Washing Machines.

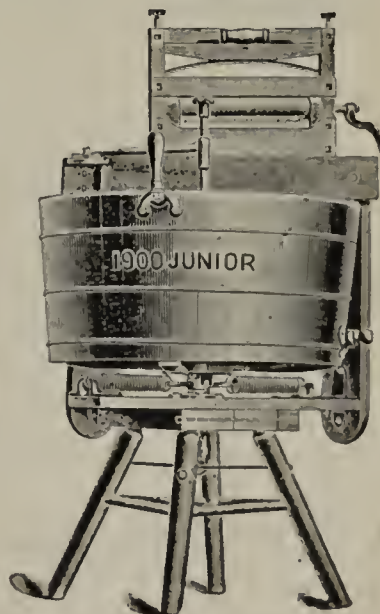
Weight of the above four Washing Machines, 250 pounds.

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-two years' practical experience in the making of washing machines, and, unlike any other washer upon the market, do not tear and wear the garment, but by the adoption of our agitator tosses and tumbles the garment through a whirlpool of water, thus forcing the water through the finest or coarsest fabrics, causing the clothes to become absolutely clean, without boiling or scrubbing, without wear or tear, and without the use of chemicals.

Send us \$26.50 for two "1900" and two "1900" Junior Washers TO-DAY. We will ship the washers same day that we receive your order. In acknowledging receipt of your order we will quote you price of washers in car-load lots. You will quickly convert your sample order of four washers into cash, with a profit of over 100 per cent.

THEN YOU WILL ORDER IN CAR-LOAD LOTS.

Orders received direct or through export commission houses. When ordering through the latter, please specify "1900" and send us duplicate of order.



The "1900" Washer Company,
BINGHAMTON, NEW YORK, U. S. A.

CELEBRATED FURNACE BRAND**ROOF PAINT
STACK PAINT
IRON PAINT**

Fire, water, rust, fume proof.
For protection of tin roofs, iron roofs, felt
roofs, smokestacks, iron work.
The most durable, toughest, elastic, adherent
roof paint made.
Guaranteed to prevent rust for five years.

Special attention to export orders. Write for prices and printed matter.

GUARANTEE ROOF & METAL PAINT CO., 307 North St., Baltimore, U.S.A.

Woolsey's Copper "BEST" Paint
HAS NO EQUAL,

As its increased consumption each year clearly demonstrates. The same can be said of our full line of Marine Specialties, of which we are the largest manufacturers in the world. We guarantee our Copper Paints to be superior to any other make.

Yacht Copper Red,
Yacht Copper Green,
Yacht Black,
Yacht White,
Rubber Seam Paint,



Marine Black,
Marine White,
Marine Green,
Bronze Green,
Smoke-Stack Black.

Anti-Corrosive 1st Coat **Iron Bottom Paint**, Anti-Fouling 2d Coat.
Also Manufacturers of Varnishes, Japans and a full line of house paints.

C. A. WOOLSEY PAINT & COLOR CO.,
JERSEY CITY, NEW JERSEY, U. S. A.

**PAINT.**

Ready-Mixed Paints for Houses, Barns, Fences, Roofs,
Iron and General Structural and Bridge Work.

American Copper Paint, Yacht Red and Yacht Green, Anti-Corrosive Submarine Composition, First Coat; Anti-Fouling Submarine Composition, Second Coat; for Bottoms of Iron and Steel Vessels.

**WHITE LEAD, ZINC, COLORS IN OIL,
OIL AND VARNISH WOOD STAINS, PURITAN ENAMELS,
OLD GLORY METAL POLISH,** in Liquid or Paste Form.

Sample Cards on application. Special Colors to order. Orders filled through commission houses. Correspondence solicited.

American Paint and Color Co.,
388 PEARL STREET, NEW YORK, U. S. A.

AMERICAN TIME STAMP.

Stamps
Date and
Time of
Receipt
on your
Letters,
Orders,
Invoices,
Etc.
Stops all
disputes,
doubts
and an-
noyance
as to the
exact
time a
particular
thing
was done.

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ANSWERED

Used as an ordinary hand stamp. Almost no limit to its practical uses. Costs one-tenth the amount of a good clock stamp, and does better work. Marks time by quarter hours. Nothing to get out of order. Sole agencies extended to reliable firms. Write for special export prices and complete description. Send for Catalogue and Export Discounts.

A. A. WEEKS MFG CO., 11 Gold St., New York, U. S. A.
Manufacturers of Glass and Iron Inkstands and Office Stationery.

**"New Jersey" Copper Paint
LEADS THEM ALL**

So Our Testimonials Say

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so fluently ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, N. Y. City.

NEW JERSEY YACHT RED COPPER

For Yachts. Brightest Color Made

NEW JERSEY SEAM PAINT

A Perfect Substitute for Pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,
JERSEY CITY, N. J. U. S. A.

Remarkable Fact

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint**, manufactured by Harry Louderbough, proprietor of **NEW JERSEY PAINT WORKS**, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florenee Shay."

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest
Medals:

Gold, Silver and
Bronze.



Excels on Every
Point.

Cheapest to Use in
the End.

TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 6, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-TWO YEARS
RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

Manufactured Only by **TARR & WONSON, Limited,**
GLOUCESTER, MASS., U. S. A.

Saves Work in Every Office

Every office, bank, business or manufacturing plant can profitably use a

BATES

Hand-Numbering Machine

Insures accuracy in numbering bills, orders, policies, bonds, etc., and saves at least one man in the office force. Numbers consecutively, duplicates or repeats, as you wish. Made to last.

Edison Laboratory Products

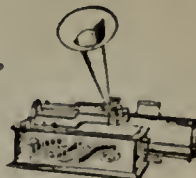
Are all distinctively superior. Numbering Machines, Phonographs, Records, Kinetoscopes, Films, Primary Batteries, Fan Motor Outfits, etc. Write for free catalog and prices to

National Phonograph Co., Foreign Dept.,
Section 5,

31 Union Square, New York, U. S. A.

Cable Address: "Zymotie, New York."

Chicago, London, San Francisco.



Single
Tools or
Complete
Equipments.
Smallest
to Largest
Sizes.



No. 1 New Band Rip Saw.

WOOD WORKERS, DO YOU RIP MUCH LUMBER?

A Good Saw Is to **USE** a Good Saw. Another: The Proof of a Machine Is In the Trial.

And as the judge of this trial is the user, we'll convince you through him. Convince you that if you have lumber to rip on a small or large scale you are not meeting with the success of your competitor who uses our Band Rip Saws; and that if you are sticking on by the skin of your teeth and don't know what decent profits are, it's because you're not using the best tools.

1. Concerning **Economy**, your competitor says: "The circular saw cannot compare with it, as this Band Rip Saw produces **TEN TIMES MORE WORK** with much more satisfactory results, and at **LESS EXPENSE**. Would not be without it for treble its cost."

2. Concerning **Speed**, another competitor says: "The four Band Rip Saws have been in constant service, and are giving entire satisfaction in every respect. We are constantly ripping poplar at a speed of **200 FEET A MINUTE**, and doing it without any 'ifs' or 'ands,' too. We are more than satisfied with the results."

3. Concerning **Safety**, your competitor says: "We are pleased to state that the Band Rip Saw is the best machine for the purpose we have ever seen. It can be operated with **ABSOLUTE SAFETY**, hence it **GIVES THE OPERATOR CONFIDENCE**, and thereby gives an increased output."

4. Concerning **Efficiency**, which we all want, your competitor says: "I am pleased to state that the eight Band Rip Saws are **GIVING ME PERFECT SATISFACTION**, and I hereby highly recommend them to any one."

Send for Circulars, New Catalogue, Band Saw Book, or Books on Spoke Lathes and Sanders. Any free on receipt of postal. Send it now!

J. A. FAY & EGAN CO., ¹⁶⁴⁻¹⁸⁴ **W. FRONT ST., Cincinnati, Ohio, U. S. A.**

Acetylene Gas Ranges, Hot Plates and Burners

Special Offer on Trial Order for Export:

One each 4 Burner and Oven, and 2 Burner and Oven Acetylene Ranges. One each 1, 2 and 3 Burner Acetylene Hot Plates.

All the above sent carefully crated and boxed upon receipt of \$45, current United States funds. Catalogue "C" on application.

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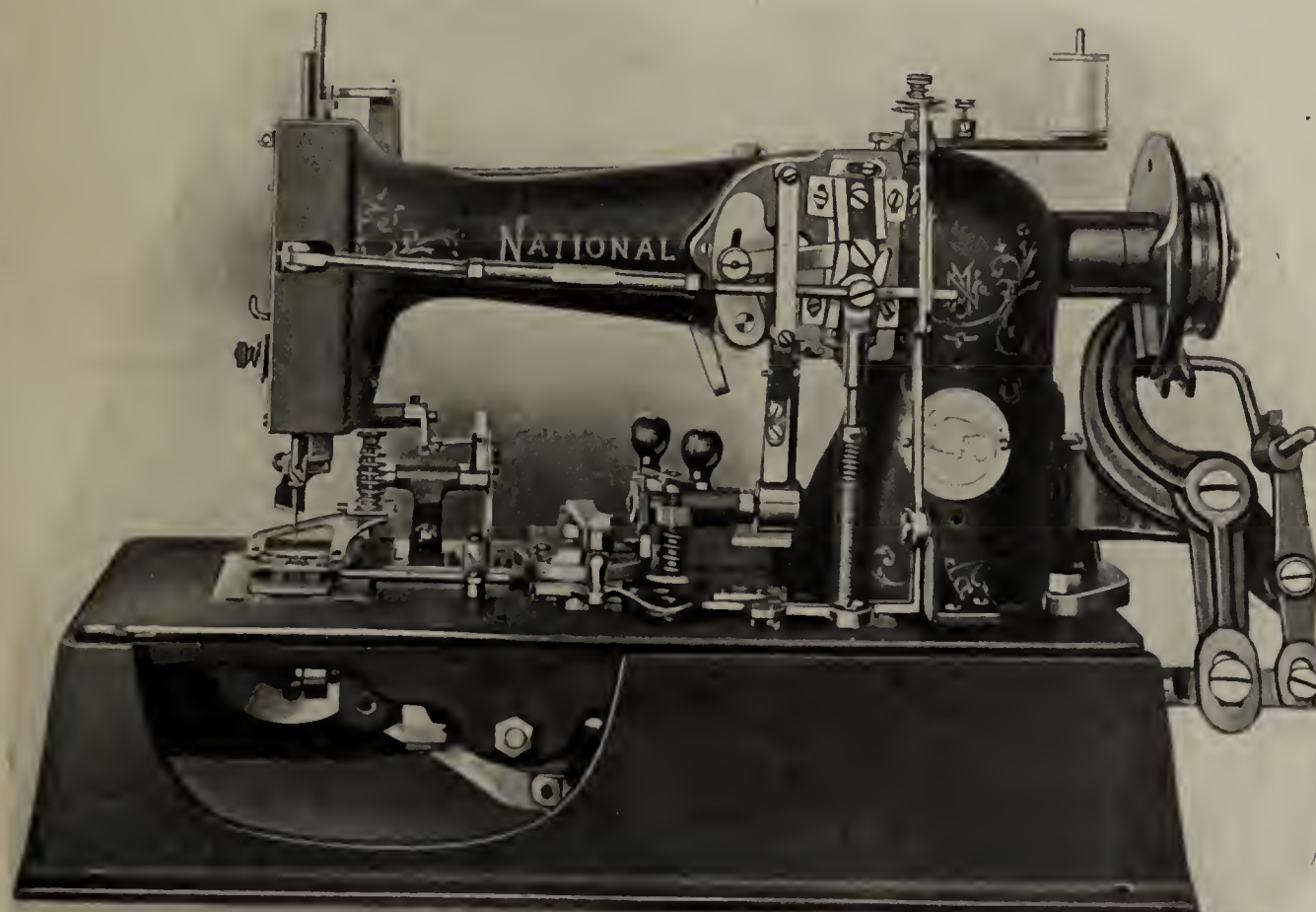
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MAMARONECK, N. Y., U. S. A.



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**Best Buttonhole
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No. 15

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It Has No Equal in
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Durability,
or in Quality and
Quantity of Work
Produced**

It Makes the
**National
Hand-Method
Barred Buttonhole
in Perfection**

**Completely
Automatic from
Start to Finish**

MR. JOHNSTON'S FOREIGN TOUR



MR. W. J. JOHNSTON
PUBLISHER
AMERICAN EXPORTER



COUNTRIES VISITED

Will Be

HAWAII

JAPAN

PHILIPPINE
ISLANDS

CHINA

AUSTRALIA

NEW ZEALAND

TASMANIA

SAMOA

ON JULY 8th, 1905,

Mr. W. J. Johnston, publisher of the AMERICAN EXPORTER, will sail from San Francisco on the Pacific Mail Steamship "Manchuria," for the Hawaiian Islands, Japan and the Philippines, and thence to China and by way of the Torres Straits, Port Darwin and Thursday Island to Australia and New Zealand, returning via Samoa and Hawaii.

The Far East is familiar ground to Mr. Johnston, having been covered by him on a previous tour of the world. Besides renewing many valuable business acquaintances, he will on this trip seek to form many others, to the mutual benefit of all concerned.

At the same time this tour is made the Taft Commission, composed of Hon. William H. Taft, Secretary of War, and United States Senators and Congressmen will visit Hawaii, Japan and the Philippines.

Half the population of the world is in the countries bordering the Pacific Ocean, and when the Panama Canal is completed American manufacturers will be brought into still closer contact with the people of the Pacific.

These great markets naturally look to the United States for manufactured products, and the purpose of this trip is not to actually sell goods, but to bring the importer and consumer in the countries visited to a closer acquaintance with American manufacturers.

We trust our readers and others in the countries visited, interested in American manufactures, will find pleasure and profit in meeting the publisher of the AMERICAN EXPORTER on this tour.

MR. GEISSEL'S FOREIGN TOUR



MR. HENRY L. GEISSEL
EDITOR
AMERICAN EXPORTER



COUNTRIES
VISITED
Will Be
NORTHERN
AFRICA
SPAIN
PORTUGAL
ITALY
SWITZERLAND
GERMANY
AUSTRIA-
HUNGARY
FRANCE
HOLLAND
LUXEMBURG
DENMARK
SWEDEN
NORWAY
ENGLAND

ON JUNE 3d, 1905,

Mr. Henry L. Geissel, Editor of the AMERICAN EXPORTER, sailed from New York on the North German Lloyd Steamship "Princess Irene" for Gibraltar, whence he will proceed to visit the places indicated on above map.

This tour is made wholly at the expense of the AMERICAN EXPORTER, in the interests of its readers and of American trade extension.

Mr. Geissel will call upon the subscribers of this publication and others interested in the purchase, sale, use or importation of American goods, and by gaining a closer acquaintance with the actual requirements of the markets visited, it is expected that the AMERICAN EXPORTER will be enabled to yet more materially assist both the buyer abroad and the manufacturer at home.

Mr. Geissel has made numerous trips of a similar nature over this territory. In addition to a thorough knowledge of both sides of the question, he speaks the languages of the countries to be visited, and has acquaintances in each place on his route. He will endeavor to meet all who are interested in American manufactures.

He will be prepared to furnish desired information relating to various articles of American manufacture, and while not engaged in their actual sale, will assist the buyer and importer in forming the most advantageous connection with American firms, and will point out where, and of whom, the articles best fitting the requirements may be obtained.

We trust each of our readers in the countries visited will find pleasure and profit in this AMERICAN EXPORTER tour in the interest of American foreign trade.

OUT-HATCHES ITS COMPETITORS!



Why does the Reliable Incubator give such remarkable results—batching 85, 90, 95 per cent. of the fertile eggs? Because our heating, regulating and ventilating systems give pure, vitalizing oxygen to germ and growing chicks. Other reasons why the Reliable is a profit-bringer are its durability, and economy of time and material. It has double top and bottom, made of best kiln-dried lumber, so treated as not to absorb moisture.

Reliable Incubators

have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center is always the same temperature—a mellow, even beat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on batching and raising poultry successfully. Just send 10 cents to pay postage.

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First of all, get this book. No matter what other makers you write for a catalogue, write us, too. We will send you the best book of all—written by the man who has devoted 22 years in perfecting RACINE HOT-WATER INCUBATORS AND BROODERS. When you learn what he knows you will want his machine, we think. The book is our illustrated catalogue—that is why we send it free. But it is more than a catalogue. It tells all that an incubator should be and why. Write to-day for it. Reliable representatives wanted. Prices quoted for export admit of big profits. Address

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The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

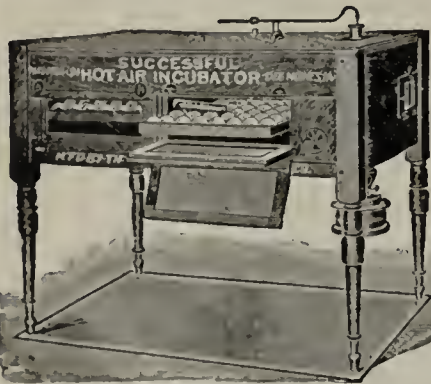
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is regarded by those who have made money out of poultry raising as the greatest egg-hatching machine of the day. Heat, moisture and ventilation controlled automatically. Hatches well in the hottest and driest climates of the world. The walls of our machines are built on the refrigerator plan and packed with mineral wool asbestos. Sizes from 54 to 100 eggs. Prices from \$10 to \$37. Both hot-air and hot-water heating systems used. All hot water tanks made of 14-oz planished copper.

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Ideal

Incubators and Brooders

are experience machines. The common sense every-day working models of America's greatest poultry raiser for profit. Called

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in his own country because he used all leading makes of incubators for 20 years in his own business before perfecting his ideals. They are as nearly absolutely automatic in all workings as it is possible for such machines to be. Best for beginners, best for experienced poultry raisers.

Convenient Sizes to Suit All Wants

The same large catalogue, covering poultry, incubators and brooders, sent to domestic and export trade inquiries, and is mailed free. Address

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Box 104, Freeport, Ill. U. S. A.

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DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., ½ lb. or assorted.

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DOLE BROS.' "SPECIAL" HOPS—Put up in Duck-wrapped bales containing 10 lbs. each.

ALSO HOPS IN LARGE BALES FOR BREWERS.

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DOLE BROS. HOPS AND MALT CO.,

101 Commercial St., BOSTON, MASS., U. S. A.



ROSS BROTHERS, WORCESTER, MASS., U. S. A.

MANUFACTURERS AND EXPORTERS OF CHICKEN FOODS,

Wish to call the attention of foreign importers to their "WYANDOTTE" CHICKEN FOOD, largely used in the United States by those who raise chickens either for pleasure or profit. It is a cheap, nutritious food; superior to any kind of grain or wet food for young chickens or for poultry. Send a trial order and you will become a permanent customer. Order through any responsible commission merchant. Send for Catalogue "R." Address as above. Henry W. Peabody & Co., New York Agents for Australia and New Zealand.



Poultry Supplies.

Prairie State Incubators and Brooders, Russ, Prize, Champion and Old Homestead Brooders, Wire Fencing, Feeds, Drinking Fountains, Bone Cutters, Caponizing Instruments, Lice and Vermin Killers, Condition Powders, Trap Nests, Cold Water Paint, Dog Medicines and Foods, Live Dogs, Cats, Chickens, Ducks, Geese, Pheasants, Pigeons, Guinea Pigs, Rabbits and Belgian Hares, Goats and All Kinds of Pet Stock.

A complete list will be found in our immense 162-page Illustrated Catalogue, which will be sent free to any address. Send for one.

Excelsior Wire and Poultry Supply Co.

Dept. 2 E.

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The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce Lattice Potatoes. Is extremely simple to operate and sells rapidly wherever shown.

\$16.50 Upon receipt of SIXTEEN and 50-100 DOLLARS in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. New York, one gross [144] No. 6 X SLICERS, for Export only. Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

HANDY THINGS CO.,

Manufacturers,

LUDINGTON, 40 to 50 Bowe Street, MICHIGAN, U. S. A.



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MUSKEGON, MICH., U. S. A.

Cable Address: "MOON," Muskegon.

Manufacturers
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Roll-Top Desks,
Flat-Top Desks,
Bookkeepers' Desks,
Typewriter Desks,
Filing Cabinets,
Typewriter Stands,
Directors' Tables.



No. A20.

No. A20.—50 inches long; 30 inches wide; 48 inches high. Weight, 230 pounds.

A modern, neat and practical desk. Quarter-sawed white oak front. Drawers have moulded fronts, carved wood pulls. Center drawer with flat-keyed lock. 14 pigeon-hole boxes with quartered-oak fronts and bronze label-holder pulls. Closed paneled back.

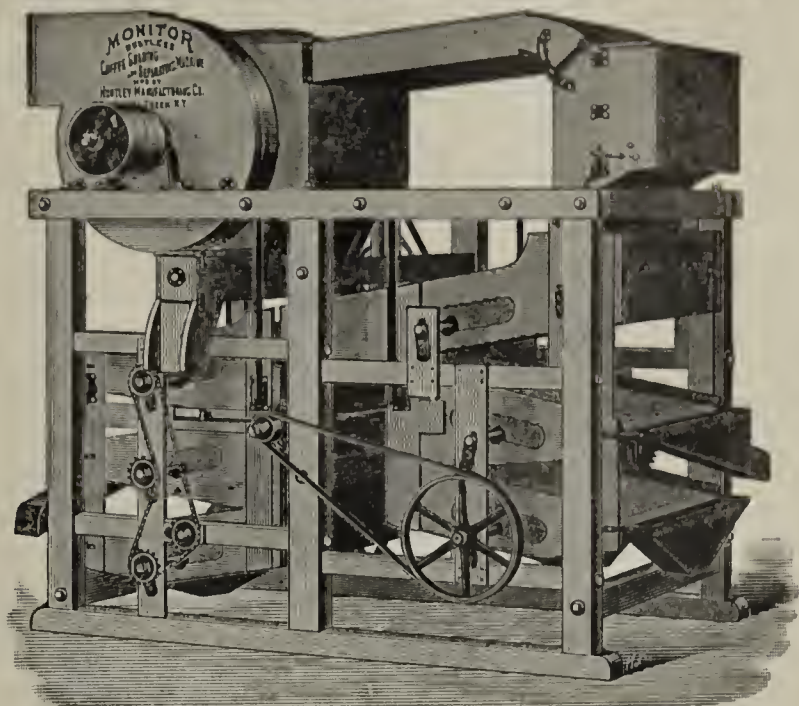
Arrangement—Letter file in right-hand pedestal with index and compressing device. Card index drawer in right-hand pedestal supplied with follow block attachment; four drawers in left-hand pedestal. Double or deep drawer in right-hand pedestal partitioned for books. Can furnish drawers both sides if desired. Finish—Fine gloss finish, golden oak.

Let us have your orders. We believe you will be pleased and satisfied with the "New Moon."

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This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

Monitor Grain, Cereal and Seed Cleaners are unequalled for quantity and superiority of work and low operating expense.

Send to-day for our Illustrated Catalogue of the entire Monitor line, with export prices F. O. B. steamship, New York City.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.



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MANUFACTURERS OF

FRAMED PICTURES, MIRRORS
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No. 1822. 16 x 28; showing Pearl Oil Painting on Glass; 1½-inch Gilt Frame and Gilt Mat; \$16.20 net per dozen, assorted subjects.



BENTLEY & GERWIG FURNITURE CO.,

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BEST OFFICE DESKS AND WARDROBES IN THE WORLD
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THAT'S ALL WE CLAIM.

Export our specialty. Our patented knock-down device makes it easy to set up our Desks in 10 minutes.

POSITIVELY GUARANTEED TO BE THE BEST DESKS IN THE WORLD.

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All prices are for goods packed for export. Write for catalogue.

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PARKERSBURG, W. VA., U. S. A.

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The Rambler is, we believe, the only automobile that can claim the distinction of having one-armed operators. A single lever to the right of the operator starts the machine; one pedal makes it stop, and another reverse; while the throttle and steering wheels, movable at the same instant and by the same hand, control the speed and guide the front wheels. Confusion is impossible, even in emergencies. It is preeminently the machine for women, children and men who have not the time to master complex mechanism.



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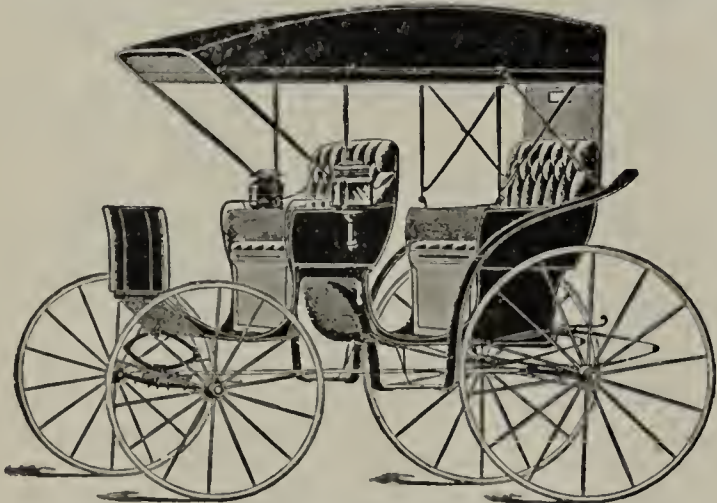
MULLER, MacLEAN & CO., 116 Broad Street, New York City.

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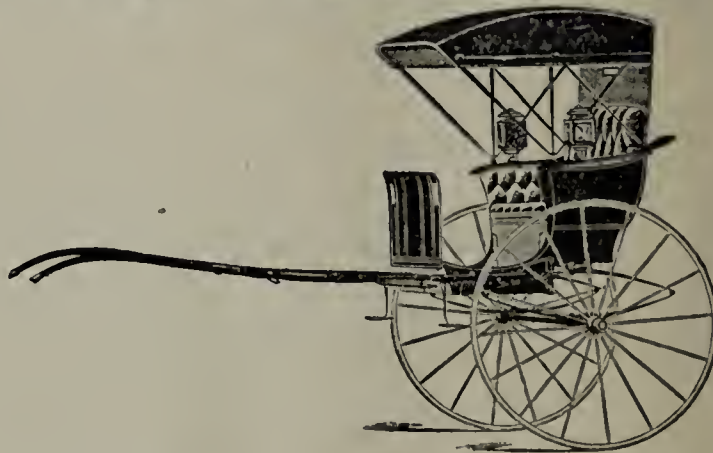
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No. 2003. THREE-SPRING CARRIAGE.

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OF
VEHICLES,
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STYLES
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HARNESS.



No. 10. CART WITH TOP.

No. 10 cart is a most excellent rider, free from horse motion. The construction throughout is the best and is guaranteed to stand in any climate.



No. 15. CART FOR TWO OR FOUR PASSENGERS.

Is perfectly balanced for either two or four passengers by sliding seat forward or back. Guaranteed in every particular first class. Free from horse motion.



No. 3001. HEAVY CORNISH BUGGY.

Guaranteed to give perfect satisfaction over roughest, poorest roads.

Our general catalogue, fully describing complete line of vehicles and harness, mailed on application. Address

THE COLUMBUS CARRIAGE AND HARNESS CO., Columbus, Ohio, U. S. A.

AMERICAN EXPORTER

ESTABLISHED 1877—CONDUCTED BY EXPORT SPECIALISTS.
With which is incorporated the AMERICAN MAIL AND EXPORT JOURNAL.

Vol. LVI.

NEW YORK, JUNE 1, 1905.

No. 1.

PUBLISHED BY THE JOHN C. COCHRAN COMPANY,

W. J. JOHNSTON, President,

120 LIBERTY STREET, NEW YORK.

Tel.: 6577 Cortlandt. Cable: "Amexpor." Codes: A B C 5th edition; Lieber's.

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CLEVELAND:

1330 Williamson Building.

SAN FRANCISCO:

10 Chronicle Building.

DORTMUND, GERMANY:

56 Arndtstrasse.

The AMERICAN EXPORTER is the pioneer and most extensively circulated publication devoted to the upbuilding of a world-wide demand for American manufactures. It is published on the first of each month in English, and on the fifteenth in Spanish ("Exportador Americano").

SUBSCRIPTION to any part of the world, \$2.00 a year, American gold, or an equivalent sum in any other currency. Single copies, 20 cents.

ADVERTISING RATES are exceedingly reasonable for a journal of the age, circulation and standing of this publication.

CHANGES IN ADVERTISEMENTS should reach the New York Office ten days preceding the issue in which the change is to be made. New advertisements can be received up to one week preceding date of issue.

The AMERICAN EXPORTER is both an independent and an impartial trade journal. Its publishers have no connection with any manufacturing concern, export commission house, or other business, except publishing, and hence have no outside interest to serve. Its editorial management is separate and distinct from its business management. It treats all its customers alike, and charges the same price for the same service to all.

If, with a larger staff and laid out on broader lines than heretofore, the AMERICAN EXPORTER is more energetic and vigorous than it has been, this does not involve any change in the high aims, thorough independence and conservative management which have for the twenty-eight years of its existence marked its progress and contributed to its influence and stability.

Entered at the New York Post-Office as mail matter of the second-class.

Address communications and make checks, etc., payable to

AMERICAN EXPORTER, New York, U. S. A.

Organizations for South American Trade.

An organization called the River Plate Association and a plan by State Senator George B. Griggs, of Texas, to establish a Pan-American Trade Congress are described at considerable length in this edition of the AMERICAN EXPORTER. These organizations, springing up almost simultaneously in different parts of the United States, show that American manufacturers clearly realize the importance of South American trade.

Opening of Portland's Centennial Fair.

At Portland, Ore., on June 1st, the Lewis and Clark Centennial Exposition was opened with imposing ceremonies. At Washington, President Roosevelt touched an electric key which started the machinery of the Exposition, while on the grounds Vice-President Fairbanks delivered the principal address. In his speech he dwelt upon the importance of America's trade relations in the Orient, declaring that the United States must "cultivate relations of amity with the millions who dwell beyond the Pacific."

America's Influence on Other Nations.

"Without the least taint of flattery, it may be safely asserted that Japan is indebted to no other country so much as to the United States," says Mr. Eki Hioki, first secretary of the Japanese legation at Washington. Mr. Hioki made this statement in an address before an American audience. Excerpts from the address are given in this edition. The Japanese diplomat broadly asserts that the development of his country dates from the historic visit paid to it by Commodore Perry. Since that period Japan has made marvelous strides, chiefly through her intimate trade relations with the United States. Japan placed full confidence in America, and this country gave her what President Roosevelt would term a "square deal." There is a great lesson in this for other nations. History has shown that the United States is a helper, but never a usurper in commercial development. Let those who doubt the efficacy of commercial relations with America read Secretary Hioki's speech and the remarks of Baron Kaneko which are appended to it.

A Cabinet Officer's Forceful Utterance.

Before the National Association of Manufacturers of the United States, at Atlanta, the Hon. Victor H. Metcalf, Secretary of the Department of Commerce and Labor, delivered an address which will rank as a masterpiece in the commercial history of the United States. That part of the address relating to foreign trade is published in this edition of the AMERICAN EXPORTER. No one interested in the development of American commerce can read it without experiencing a deep appreciation of the rapidity with which our foreign trade has expanded. Since these gains have come largely without effort on the part of American manufacturers, they indicate the gratifying returns which may be expected when an aggressive campaign is inaugurated, with the determined purpose of reaching the markets of the world. In 1860 the United States ranked fourth as a manufacturing nation, the United Kingdom being first, France

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second and Germany third. Now America ranks first, but as yet supplies only one-eighth of the manufactures used in foreign countries. This Mr. Metcalf says is largely due to the fact that American manufacturers have as yet made little serious effort to extend their markets abroad.

The Foreign Policy of the United States.

In our present issue will be found an authoritative statement of the foreign policy of the American Government, as enunciated by President Roosevelt in his speech before the Merchants' Club in Chicago. The same sentiments have since been expressed by him in an address delivered on Decoration Day in Brooklyn, N. Y. This outline of the Administration's policy is particularly impressive, in view of the fact that it is generally understood that the Chief Executive is now in a position to carry out his wishes.

It should be understood, however, that neither President Roosevelt, personally, nor the nation over which he presides, has any but peaceful intentions. The strengthening of the United States navy is designed as a means of strengthening the bonds of peace by which it is bound to other nations. The rapidly growing export trade of the United States, as well as the needs of America's outlying territory, makes an increase in its number of vessels desirable. It may be depended upon that there is no intention of utilizing America's increasing strength to intimidate smaller or weaker powers. "The world's peace" has no more sincere and ardent advocates than the United States and its distinguished President.

The American Exporter in New Garb.

With this issue the AMERICAN EXPORTER celebrates the beginning of its fifty-sixth volume by inaugurating several changes, which it hopes will be considered improvements, and will still further increase the favor in which the publication has always been held by readers the world over.

The standard size—now adopted by the most progressive trade and technical journals—not only insures its reaching the reader in better condition and in a more convenient form, but also favors improved effects in both reading and advertising pages. Since the publication throughout is the work of export specialists, the uniformity of type is appropriate.

In addition to editorial matter of high grade, it will be observed that the editors have reverted to the AMERICAN EXPORTER's former policy of publishing signed contributions from authorities well known to the trade at large. The addition of illustrations will no doubt be received with general approbation.

In the number and character of its advertisements, the quality of its reading matter and its general typographical effect, both publisher and editors are seeking earnestly to advance the standard which has heretofore placed the AMERICAN EXPORTER in the front rank of trade publications. Bringing the reading matter all together and classifying the advertisements will, it is believed, be particularly appreciated by readers.

Tours in the Interest of Foreign Trade.

As elsewhere announced, the AMERICAN EXPORTER has planned two extended tours for the purpose of bringing the foreign buyer into closer touch with the manufacturers of the United States.

By the time the present issue reaches its readers, Mr. Henry L. Geissel, editor, will be on his way to Europe; a month later, Mr. W. J. Johnston, publisher, will leave for the Far East.

A campaign of such magnitude, undertaken solely at the expense of the publication, indicates the profound interest of the

AMERICAN EXPORTER in the extension of international trade. Since the tours are not taken in behalf of any individual concerns, but with the larger welfare at heart, the results are expected to be far-reaching. Each of these experienced travelers and export specialists will make a close study of trade conditions in the countries they visit, noting the particular kinds of manufactures needed and acquainting foreign importers and large consumers with the character of American goods. This, it is believed, will be of advantage both to the foreign buyer and to the American manufacturer.

This expert information, gathered at first hand, will be utilized in a practical way, with a view to bringing the buyer and seller together. In addition, our reading columns will receive added interest by reason of important articles based upon fresh data gathered abroad.

The Fight in the Japan Sea.

The Eastern horizon, which has long been heavy with the clouds of war will, it is hoped, soon be aglow with the dawn of peace. The conflict between Admiral Rojestvensky's ships and the united squadrons of Japan, upon which all eyes have long been centered, has now passed into history as one of the great naval battles of the world. The Baltic fleet, upon which the Czar had centered all his hopes, has been practically annihilated, and this without serious loss to Admiral Togo's vessels.

The contest was not so much a fight between two widely different nations or races as it was a contest between advanced modern progress on the one hand, and ultra-conservatism on the other. The outcome seems to have been generally expected by impartial observers, though the overwhelming magnitude of Russia's disaster has been surprising to all.

The interest with which the clash was awaited has been intensified by the fact that, to a great extent, the commercial future of the Far East hung in the balance. It has been first of all a question of peace, of the tranquillity of the seas; after that, the perennial question of "the open door." As soon as it became apparent that defeat at Port Arthur and Mukden had failed to terminate hostilities, the hope was freely indulged that the inevitable naval battle would result in overtures for peace.

This, it would seem, must necessarily follow. With the Mikado's army in control of Manchuria, practically every battleship either destroyed or in the hands of the enemy, and with an ever-growing spirit of discontent within its own borders, Russia can scarcely afford to longer pursue a course of war; hence the hope of peace mitigates, to a slight extent, the horrors of battle.

To the commercial world, peace will not only bring renewed opportunities for the transaction of business in the Far East, but also a more generous policy. There can be no doubt but that the terms insisted upon by the victor will insure to the great commercial nations an open door in China and Manchuria. Then, in the region where armies have met armies and where cruisers and battleships have clashed together, the world will engage in a vigorous but friendly commercial rivalry, and the results will be no less renowned victories of peace.

The AMERICAN EXPORTER has no interest in religious or political movements except in their relation to international trade. In expressing the hope that peace may follow the naval battle as speedily as consistent with the best diplomacy, we believe we voice the sentiment of the world of commerce. That Japan would willingly accede to overtures for peace, there is not the slightest doubt.

EFFECT OF THE GOLD PRODUCTION ON AMERICAN INDUSTRIES.

The unprecedented production of gold throughout the world is having its effect upon industrial conditions, and has given international trade an enormous impetus. It has placed practically all the great nations on a common monetary basis—the gold standard. Mexico has just entered the fold, and Corea's gold laws go into effect on July 1st. China, alone of all the great countries, remains on a silver basis. And there are now signs that this great nation, with its 400,000,000 inhabitants (nearly one-quarter of the population of the world), is awakening to the call of progress. The success of modern Japan is having effect upon the merchants of China, who are advocating new methods.

Industrial students declare these advancements to be due to the appreciation of the world's stock of gold, and to the constantly increasing production. There is every indication that the volume will continue to increase at a much greater ratio. In fact, economists predict a deluge of gold within the next decade. Last year the gold output was \$350,000,000, nearly double the amount produced ten years prior. It is believed by many that 1905 will produce gold to the value of \$400,000,000, and that within three years this annual output will increase to \$500,000,000. During the first four years of this century the gold production of the world amounted to \$1,200,000,000. Contrast this with the production of the entire eighteenth century, \$1,308,000,000, and the great increase can be comprehended.

The effect of this increase upon the commerce and industries of the world can only be imagined. Industrial progress has made such headway that its scope within the next decade cannot be predicted. The United States is now entering upon an industrial period of great magnitude. Its gold production is adding millions to its wealth, while the whole sum of its industrial productions and natural resources is increasing more than \$3,000,000,000 annually. The wealth of the United States to-day is more than \$100,000,000,000. The population of the United States, which is 80,000,000 to-day, is increasing rapidly. Her ability to absorb millions more is apparent. Were the population of the United States as dense as Europe, there would be 600,000,000 persons within her borders. And the United States is able to care for this increase which must come. No other country possesses so much marvelously fertile land or such inexhaustible natural resources.

With raw material in abundance, her fields most productive, her mines inexhaustible, and her forest unlimited, manufactures must flourish. And while waiting for the population, the factories of the United States will be able to sell its surplus to the world. Its export trade is steadily gaining, and the demand for its manufactured products increases year by year, as the superior merits of American goods force themselves upon the attention of the consumers of the world.

The foreign buyer, therefore, can look to the great farms, mines, forests and factories of the United States for all the necessities and luxuries of life, and not be disappointed. In purchasing American products, the world will reap a share of the profits made possible by the prevailing conditions which have their genesis in the stupendous production of gold, and which makes it possible for all nations to trade with a common standard of value.

OUR EXPORT TRADE—1877, AND NOW.

Aggressive, organized effort for the promotion of American exports dates from the Centennial Exposition at Philadelphia in 1876, the first (and in many respects the most notable) of the world expositions held on American soil. Its influence was potent and far-reaching. For the first time, the products of American and European manufacturers were placed side by side; as a result, foreign visitors were impressed not only with the excellence of the American exhibits, but also with the large number of awards accorded to American manufacturers by reason of the superiority of their goods.

The large number of foreign import merchants present on this occasion discovered among the industries represented new sources of supply for the markets to which they catered. It was but natural that they should carry back to their several countries a deep conviction that the products of American factories could be successfully introduced into the markets of the world, to the mutual advantage of importer, producer and consumer.

The immediate effect upon the American manufacturers themselves was equally pronounced. For the first time the needs of the foreign consumer began to be understood. It became evident that the capacity of our factories must be enlarged to supply the inevitable increase in the demand for American goods. A mutual feeling of respect and confidence engendered by even casual contact was also an important feature, inasmuch as national prejudice is one of the greatest obstacles in the way of foreign commerce.

The manufacturer who had hitherto been content with efforts designed to meet the demands of the home market, with possibly the exportation of a small percentage of his output to Europe, began to see vast possibilities in all the markets of the world.

At this time the United States had not a single publication devoted exclusively to the interests involved in a world export trade. It was clearly evident, though, to both manufacturer and foreign visitor that some means of inter-communication should be established.

The foreign importer desired to be kept in touch with new inventions and other developments on this side of the sea. The home manufacturer, on the other hand, desired information with respect to the trade conditions of the various countries looming up on the commercial horizon.

At that early time, when the Government did not so industriously exert itself to supply information such as is now published in *Consular Reports*, it was desirable that a publication should be launched which would be mutually helpful to both domestic and foreign interests.

This demand was promptly met. By a curious coincidence, two publications appeared in 1877 almost simultaneously—the *AMERICAN EXPORTER*, founded by Messrs. Root and Tinker, and *The Mail and Export Journal*, founded by Messrs. Howard Lockwood & Co. To those who have been identified with the export trade during the past quarter of a century, it is unnecessary to speak in detail concerning either of these publications.

For nearly twenty years, each in its own way, in a spirit of vigorous but friendly rivalry, these journals did effective service in the laborious commercial campaign which has resulted in the great expansion of the export trade of the United States. After two decades of keen competition along honorable lines, the *AMERICAN EXPORTER* absorbed the other publication.

At the beginning of the present volume, under a change of management, it is fitting that passing mention, without eulogy, should be made of those who have kept the AMERICAN EXPORTER in its original place as the chief exponent of American trade in foreign countries. The active part played by each of the gentlemen mentioned is too well known for extended comment to be justifiable.

Almost from the beginning, both the business and editorial management of the AMERICAN EXPORTER were under the immediate direction of Mr. John C. Cochran. He entered upon his arduous labors with lofty business ideals, which were consistently and in the face of opposition, steadily maintained. His enviable record and the splendid results accomplished in behalf of American commercial expansion are not only part of the history of the publication, but also of American export trade.

From its incipency, the AMERICAN EXPORTER gathered about it the men best qualified for the work to be done. Prominent among the editorial writers who have contributed so much to the success of the publication, is Mr. George Bartholomew, an exceedingly capable journalist, who served as its responsible editor for more than fifteen years. Messrs. Charles S. Elliot, Allen Ripley Foote, E. M. Vose and Edwin S. Drew, who served for briefer terms, have also had no small part in elevating the paper to its present standard.

Meanwhile, as American manufacturers became more and more familiar with the conditions existing in other markets, through the invaluable assistance rendered by the Department of Commerce and Labor, the character of the publication was in part changed, its subsequent efforts being directed to the task of acquainting the foreign reader with the superiority of American goods. Information calculated to assist the manufacturer only was thenceforward supplied in person or by letter; consequently the circulation of the AMERICAN EXPORTER is to-day almost entirely in foreign countries.

The rapidity with which our trade with Spanish-speaking countries increased made it evident that the AMERICAN EXPORTER should convey its message to the importers of such countries through the medium of their own tongue; hence the establishment of the EXPORTADOR AMERICANO. Under the capable editorship of Mr. Ramon Bolet, the Spanish edition has for fifteen years been the best-known American export journal circulating in Spanish America.

The contributors to the columns of both the English and the Spanish editions during these many years have included a host of large-minded, progressive business men and newspaper writers of distinction in their special fields. It is interesting to note that Capt. W. L. D. O'Grady, who contributed the first article in the first number of this pioneer export journal, has spanned its whole existence, an article by him having been published in our last issue.

It is a pleasure to here record the fact that Mr. Charles T. Root, one of the founders of the AMERICAN EXPORTER, still survives, yet a comparatively young man, to enjoy the just reward of a long and honorable business career and the deserved confidence of the commercial world. He was a pioneer in the field of trade journalism and to-day is at the head of one of the leading publishing houses of New York.

A glance at some of the figures given in the first issue of the AMERICAN EXPORTER serves to emphasize the marvelous growth of American export trade and also suggests the important part

which this publication has enjoyed in making the figures of 1904 possible.

The exports for 1877, domestic and foreign, including specie, amounted to \$658,637,723; in 1904 the export trade mounted up to \$1,591,825,873. In the former year 72.63 per cent. of the exports were credited to agricultural products and 21.16 per cent. to domestic manufactures; the principal part of the remainder belonged to the output of our mines and forests.

Of the foreign exports twice as much was shipped in foreign vessels as in those flying the American flag. The total amount of domestic manufactures sent out by the United States in 1877 was \$133,933,549.

In the light of the present, it is interesting to note the destination of the exports of the year in which the AMERICAN EXPORTER was established. Of all the products exported from the United States, 80.53 per cent. went to Europe, Great Britain alone receiving 54.08 per cent.; 8.60 per cent. went to Germany. 6.84 per cent. to France, and much smaller amounts to other European countries. It is astonishing to note that all the countries of South America combined received only 3.26 per cent., which was scarcely more than half of that destined to Canada. Brazil was the only country to the south which received as much as 1 per cent.; only .67 per cent. went to Mexico. It should also be borne in mind that considerable alarm was manifested at this time over the steady decrease of trade with South American countries.

Without wearying the reader with endless columns of figures, the following brief summary of the most important items is given in order that a comparison may be made between the years 1877 and 1904:

Articles.	1877.	1904.
Agricultural implements....	1,815,873	22,749,635
Brass and manufactures....	330,063	2,557,484
Carriages, cars, etc.....	1,405,015	10,936,618
Copper and manufactures....	3,281,255	57,142,079
Cotton and manufactures....	182,132,865	393,213,959
Glass and glassware.....	672,423	1,978,481
India rubber manufactures..	690,446	4,435,590
Leather and manufactures...	8,305,292	33,980,615
Musical instruments.....	926,183	3,230,982
Paper and manufactures....	948,400	7,543,728
Wood and manufactures....	18,924,500	65,428,417

It would be superfluous to remind either the American manufacturers or the foreign import merchants of the great services rendered by the AMERICAN EXPORTER and the EXPORTADOR AMERICANO in bringing about the remarkable increase in American export trade. The services rendered have been two-fold. On the one hand, the columns of this publication during these years have been largely filled with descriptive matter calling the attention of the foreign merchant to the superior qualities of our products and to new inventions and appliances adapted to the export trade. On the other hand, partly in the publication itself, but largely through its correspondents and representatives, the American manufacturer has been educated with regard to the conditions obtaining in the various foreign countries and his attention called to opportunities for the sale of his goods abroad. It is with no small pride that the publication recalls in detail the many instances in which such assistance has been cheerfully rendered.

In the future, as well, the AMERICAN EXPORTER and its corps of specialists will labor energetically and comprehensively to give the utmost of effective service in extending America's foreign trade.

THE AMERICAN MERCHANT MARINE.

By Hon. Leslie M. Shaw,
Secretary of the Treasury.

The only unprotected American industry is its merchant marine. An act of Congress, approved by George Washington, and never repealed, though frequently assailed, gives the American shipbuilder, the American shipwright, the American ship owner, and the American flag a monopoly in our coastwise trade; and we have not only the most efficient service, but the cheapest coastwise rates in the world. By acts of Congress, non-partisanly passed, transcontinental railways have been granted liberal subsidies of moneys and lands until we have the best railway system in existence, and the cheapest rates enjoyed by any people, not excepting countries where the roads are owned by the government. Through Government encouragement and protection, our factories turn out more manufactured products than any other two countries on the map by more than three thousand millions per annum. By reserving the public domain for homestead settlement, and by Government encouragement through subsidized transcontinental railways and subsidized rivers and harbors, our agricultural interests are more valuable than those of any other country. The annual output of our six million farms exceeds four billion dollars. The development of our mining industries has been encouraged by many direct Congressional enactments, and because thereof, and because of the unequaled railway and coastwise facilities, to which I have referred, our mineral output has passed the billion-dollar line. Coastwise vessels unload upon the shores of a single State more iron ore than any foreign nation produces.

Without attempting to give the reasons therefor, I content myself with stating the fact that forty years ago we had only one-fourth as much foreign commerce to transport as we have now; yet we actually carried in American bottoms, forty years ago, three times as much foreign commerce as we carry to-day. These conditions seem to be satisfactory to many, but they are not satisfactory to the writer.

I am not ignorant of the argument that if foreign countries are willing to subsidize ships to carry our freight, it inures to our advantage. This might be a sufficient excuse for our supine indifference, if there were no other consideration involved than that of merely carrying our freight across the Atlantic Ocean in times of peace. Unfortunately, however, there are many other and weightier considerations.

During the Spanish war, which lasted less than 120 days, we purchased or chartered forty foreign vessels. In the meantime, every city on the Atlantic and Gulf coasts was apprehensive of an unwarned attack, and every few hours the people at Mole St. Nicholas and Monte Cristo imagined they could hear firing off to the southwest. If war were to be declared between any two of the great powers of Europe, our foreign commerce would be not only helpless, but hopeless. I forbear reference to our military and naval condition, in the absence of available colliers and transports, were the United States to

be involved in such a conflict. The proudest navy in the world is utterly worthless without coal.

As certainly as the world revolves, the time will come when our people will give more heed to securing a larger share of the trade of South American republics, South Africa, the islands south of the equator, and the countries washed by the Pacific Ocean. And there are no such agents of commerce as representatives of transportation companies. Suppose we now had regular lines of steamship communication between our ports and the countries I have mentioned, the Government paying the loss until our trade should be established: What would be the result? A representative of these lines would wait at the door of every factory in the land, begging for the production of goods especially designed to meet the peculiar needs, desires and whims of the countries for which they were intended. And let it be borne in mind that a foreign market for a million dollars of manufactured products means a domestic market for at least eight hundred thousand dollars of labor. If we shall ever increase our trade with the countries

lying to the south of us, or with those washed by the Pacific Ocean, the Gulf States will be benefited thereby, certainly as much as any other portion of our common country. If steamship communication with those countries shall ever be established, shipyards are as likely to be built on the Gulf as on the Atlantic coast, and their supply and coaling stations are more likely to be here than elsewhere. If additional cotton factories are built, they are likely to be erected where fuel, lumber, iron and labor are abundant, and where the raw material is produced at their very doors.

Nor would this be all. The establishment of trade in the countries mentioned would be followed by American warehouses, American branch offices and American banks. The conflict between the great powers of the world is no longer military,

but commercial. Europe is not seeking to establish naval stations in the direction I have indicated, but she has already established commercial stations there, and out of these are liable to arise complications fully as intricate and vastly more delicate.

I am not contending for ship subsidies, if any more feasible course can be devised. But if ship subsidies will insure us a merchant marine, then I am for ship subsidies. If some other measure will insure a merchant marine, then I am for some other measure. If several measures combined will insure a merchant marine, then I am for all such measures.

I am not advocating any particular ship subsidy measure, and if I had a vote, it would be against any bill that did not make, as a condition precedent to any Government aid, the establishment of regular steamship communication with South American or South African countries and adjacent islands, or the countries washed by the Pacific Ocean.

The United States Rubber Company, with a capitalization of \$75,000,000, has bought the control of the Rubber Goods Manufacturing Company, and thus consolidated the rubber manufacturing interests of the United States into one great corporation.



HON. LESLIE M. SHAW,
Secretary of the Treasury.

THE GASOLINE RAILROAD MOTOR CAR.

By W. R. McKeen, Jr.,

Superintendent Motive Power, Union Pacific Railroad.

The new Union Pacific motor car shown in the accompanying illustration is the railway sensation of the day. Many prominent railroad men believe that it is destined to supplant all other forms of power in the transportation world. For short hauls and suburban service it will become universally proper, since the smoke nuisance will be abolished by its use.

With these motor cars it will be easy to operate and maintain railroads in sparsely settled countries, to connect mines with the



NEW RAILWAY MOTOR CAR.

main lines of big railway systems, and to connect the seaports and the interior trading points. It can be used on the great wheat, sugar, tobacco and grain farms of the world to transport the products to the markets. It will open up hitherto inaccessible points and as a factor in the export trade will be of the greatest value. In fact the possibilities of this new gasoline motor car in the trade expansion of the world is boundless.

The new railroad system of the Philippines and lines in China, Japan and Corea in the Far East, in South America and South Africa may be equipped with them and the operation of the roads so cheapened that commerce hitherto unprofitable to move may be added to the volume of the world's international business. It is a history-making machine.

An ocean-to-ocean trip to celebrate the successful test of the new motor car is being arranged by Mr. E. H. Harriman, the great railroad magnate, who is the originator of this novel car. The officers of the Union Pacific Railroad are enthusiastic over its success in actual operation and predict that it will soon crowd out the steam locomotive on short line and branch roads, owing to its economy of operation and efficiency in service. It requires but one man to manage the mechanism and another to act as conductor, thus doing away with the fireman and brakeman required on ordinary trains.

Mr. Kruttschnitt, director of maintenance of the Harriman lines, regards it as the first practical gasoline motor for railroad work in the world, and thinks the significance of this achievement is almost as great as that of the first steam engine.

This car, built under the personal supervision of the writer, is a single truck four-wheel car, designed for twenty-five persons. The car is thirty-one feet in length, mounted on wheels forty-two inches in diameter, and weighs a trifle over twenty tons. It is lighted by acetylene, which is also used for the headlight. The motive power is a six-cylinder gasoline engine of one hundred

horse-power. The motor is capable of hauling at least one heavy passenger coach over moderate grades.

The car was turned out of the Omaha shop, where it was built, during the last week in March; after being thoroughly tested, it went into regular service on the branch line between Grand Island and St. Paul, Neb., making two round-trips (89 miles) each day. Recently the motor made the run from Omaha to Grand Island, Neb., 154 miles, in 5½ hours, an average speed of 27½ miles an hour. The maximum speed on this run was 40 miles an hour, and but for the fact that the car has not yet been fitted with full trucks, only four wheels being under it, a much higher speed could have been attained. It ran cool the entire distance, and arrived in Grand Island in first class condition. It was in service on this branch one week, when it made the trip under its own power to Denver, and thence to Salt Lake. Up to May 4th, when the car reached Salt Lake, it had covered wholly under its own power a distance of 2,095 miles, the entire distance being made without difficulty. The car has not been out of commission since starting on its journey. It will go from Salt Lake City to Portland for service on a branch line out of the latter city, for which service it was originally designed.

The car is to be operated from Omaha to Portland, Ore., exhibited a few days at the Lewis and Clark Exposition, thence run to San Francisco over the Shasta route, from there to Los Angeles, to New Orleans and thence to Chicago via St. Louis. When it reaches Chicago it will make a speed and hauling power run from that city to Milwaukee and return. The motor will then be taken to New York via Buffalo and back to Omaha by way of Washington, Pittsburg and Chicago, thus circuiting the continent.

This is for the purpose of testing its long distance abilities, power on grades and to satisfy the curiosity of railroad men between the two oceans who have manifested unusual interest in the innovation. At all important places ample time will be allowed for inspection of the machine.

The immense saving of fuel under steam is not the only advantage of gasoline. The low cost of operation would mean more frequent trains, and better passenger and freight service, as it is believed in a short time the motors will be applied to freight trains. They will also enable the present steam roads to go after their enemies in competition, the interurban trolleys, and beat the latter at their own game, as there will be no bird rails, wires or power houses to maintain. One of the advantages of gasoline would be that when a motor breaks on the road it would not tie up the entire lines, as is liable to be the case with electricity.

New Weight-Sealing Invention.—An apparatus for sealing scale weights has been recently patented in the United States. In the past, weights of scales were cast heavier than the standard and afterward reduced by drilling holes in the bottom until the proper standard was drilled out; then lead plugging was used until the weight was correct. This made it possible to tamper with the weights. Some governments refuse to accept weights thus sealed, requiring them to be turned off smooth at the bottom. The invention makes it possible to do this without removing the weight from the machine for testing by means of a balance scale adjusted to the turner, a tool to remove the surplus metal and a means to cause the scale to balance when the weight reaches its proper standard.

THE AMERICAN MOTOR-CAR INDUSTRY.

By George J. Jones.

Less than half a dozen years ago the manufacture of automobiles was practically non-existent in this country, yet to-day the industry in the United States stands on a plane of equality with that of France, the home of automobiling. At the present rate of progress another half-decade will see the American car in the van in all branches of automobile trade and sport. Indeed, in the latter particular, it is a notable fact that many of the world's records are held by American cars and American drivers. A few years ago France led in every branch of automobile production; to-day America excels in the production of moderate-priced cars for



MAJ.-GEN. SIR HENRY COLVILLE
AND LADY COLVILLE IN
AN AMERICAN CAR.

home service, which means that our manufacturers have in that time captured the bulk of the home trade. Foreign cars will always be imported, just as French gowns and millinery are brought into the country, but the American automobile builder has demonstrated to the satisfaction of almost everybody concerned that he has produced a car which does the work required of it as satisfactorily as any foreign car of similar power, and at 45 per cent. less cost. A really high-class European car costs about \$9,000; for \$5,000 it is possible to buy an American machine of equal power, as handsome in design and generally better adapted to the roads it is compelled to travel.

During the year 1904 the American automobile-makers exported motor cars to the value of \$1,897,510, a gain of \$254,481 over 1903 and an increase of \$827,728, as compared with 1902—an excellent showing for an "infant industry." The figures for the whole of 1905 will show an increase of at least 75 cent. over last year, the gain for January of this year over the corresponding month of 1904 being \$106,609. or nearly 120 per cent. In a few years, at the present rate, our foreign automobile industry will be one of the wonders of the American export trade. In this connection may be mentioned, as a straw indicating the direction of the wind, that this country is second only to France in the value of automobiles exported into Germany.

Imports of automobiles into the United States are also increasing, the figures for 1904 being \$1,700,000, as against \$800,000 in 1902. The first four months of this year show a gain of \$395,000, or 84 per cent., as compared with the corresponding period of 1904. This is not, however, an indication of increased strength of foreign vehicles in the American market. It means that the foreign trade has increased at a lesser ratio than the production and sale, in this country, of American-made cars of the same class.

While it is true that the American car, generally speaking, does follow the lines of the European vehicle, American individuality has by no means been suppressed. There is a disposition everywhere to experiment in the hope of improving on even the most universally popular designs of automobile construction, and it is

not impossible that the next few years will witness world-wide revolutions in motor-car lines which will develop from the proved excellence of American models.

In the matter of the application of the automobile principle to commercial uses, it must be confessed that American makers are behind their English brethren; but even in this line our home manufacturers are beginning to advance with such rapid strides that a few years will probably see them on even terms with their foreign rivals. The American firms which make a specialty of motor-wagon manufacturing are putting on the market, at comparatively low cost, powerful vehicles which are giving excellent results in the matter of economy of operation and ease of manipulation.

At their present rate of progress our manufacturers will soon be in a position to supply the markets of the world, and especially Europe, with their cars. A fair sum could be added to the American price of the machines, and they would still undersell their European rivals by a comfortable margin. Foreigners are beginning to realize that they have been paying too much for their cars, and a demand for lower prices is already heard throughout England, France and Germany. Of this opportunity American makers have already begun to take advantage, and not a few of them have established branches in London, Paris and Berlin.

The season of 1905 began with a big boom, which was accentuated by the national shows held in Chicago and New York early in the year. Those exhibitions demonstrated to thousands of prospective purchasers that the American automobile had "arrived"—that it was no longer necessary to apologize for mentioning it in connection with the French, English or German car. An exhibition of imported cars held in New York just previous to



AMERICAN DELIVERY VAN IN STOCKHOLM.

the national show in January failed in its purpose; indeed, it may be doubted whether the Importers' Show was a good business move. It offered an opportunity for comparison, from which American carmakers are reaping, and will continue to reap, much profit. These shows demonstrated that, in design and finish, the American-built automobile had at last succeeded in overcoming the long lead of its foreign rivals. As they stood side by side, the price-tags told a story which was eagerly listened to. Converts were made by the thousands, and the boom which opened the year

was given an impetus, which is already proving of uncomfortable proportions to the too conservative maker.

All the American consuls abroad realize the possibilities in the automobile trade, and are keeping their home governments sup-



AMERICAN BUS SHIPPED TO JAPAN.

plied with data for the use of the manufacturers. This has had its effect in increasing exports, and is likely to prove still more valuable in this respect in years to come. It has been demonstrated that the cheap, light and easily operated American cars are admirably adapted to the excellent roads of the Continent, while in those countries where the road conditions more nearly approach those obtaining in the United States, foreigners see the wisdom of purchasing cars constructed to meet just such conditions. Even in Spain, Japan, Portugal, Russia and Argentina, the American automobile is beginning to make inroads, while in Milan, Italy, an agency was recently established for the sole purpose of introducing and selling American cars, parts and accessories.

While last fall's race for the Vanderbilt cup was won by a foreign car, the showing made by the five American entries was most excellent, especially in view of the fact that in the matter of horse-power the leading home-built cars were much less powerful than their big foreign rivals. Only two of the five American cars in the race quit because of trouble, while no less than eight of the thirteen foreign entries withdrew because of disability. The American cars were not especially built for the race, while all the foreign machines were constructed specially for road contests, and were operated by men of international reputation who

had participated in most of the great European road races. Considering the handicap, the showing of the American cars was most excellent.

In last Thanksgiving Day's Eagle Rock Hill climb, a little \$2,500 American machine came within three seconds of equaling the time made by the \$15,000 foreign car which won the race. Such comparisons make the racing game a valuable advertising medium, and, in general, act as a spur to the makers to so perfect their machines as to render them equal to any demands that even the most abominable roads may put upon them. The New York-St. Louis tour was a case in point. Foreign cars, large, powerful and expensive as they are, are never called upon to face such conditions as prevailed upon that trip. The American cars came out of the ordeal with flying colors.

A representative of the Winton Company recently expressed the following view of the future of the American car abroad: "While it is generally believed that French manufacturers have a considerable advantage over American manufacturers, by reason of their somewhat larger experience, it occurs to us that the manufacture of an automobile differs only in detail and not in principle from the manufacture of other machinery; and that whatever actual or professed advantages French manufacturers may now have, this will eventually depart, and, in the course of time, American manufacturers of automobiles will secure in the world's markets a position relative to that now held by the American makers of locomotives, other engines, machine tools and agri-



AMBASSADOR PORTER IN AN AMERICAN CAR AT THE CASCADES, PARIS.

cultural implements. We assuredly believe so, and we shall secure our share of the foreign trade in automobiles, primarily on the merit of our goods and incidentally because foreign buyers have come to regard American machinery as superlatively first in merit.

"This company has made but very little effort to secure foreign trade, owing to the fact that the home demand has always been equal to and greater than the supply. Nevertheless, we realize that a certain advantage accrues to the manufacturer who distributes his trade throughout the world, and thereby relieves himself from the danger of having his business seriously affected by unfavorable industrial conditions in any single country. Acting upon that realization, this company last summer established a branch house in London, where we keep on hand at all times a complete stock of cars and supply parts, and this branch is already on a paying basis."

The Knox Company, which has devoted much attention to the manufacture of commercial cars; its output in the past year represents a great variety which have been shipped in all directions. As far as the business of this company is concerned,



AMERICAN PASSENGER CAR FOR HAVANA.

one of its officers said recently: "Our export business has increased very rapidly during the past year, especially in our commercial line, and every indication points to a larger increase of this business as our cars become known throughout the world. These include busses sent out to Japan, delivery vans to Stockholm, Sweden, and transportation wagons to the West Indies Transportation Company, of Havana, Cuba."

"It is my opinion that America will supply the bulk of the world's automobiles," is the rosy view taken by Mr. James Joyce, manager of the sales department of the Electric Vehicle Company. "The advantages of our manufacturing processes for the rapid production of machinery and parts must inevitably give us the same lead in automobile-making that we hold in the making of other special machinery. As yet our company has made no special effort to reach foreign markets, having been pushed to its capacity in supplying the home demand for its product. We have, however, regularly exported electric vehicles for several years past, the principal shipments having been to Mexico, England and France."

"We established our branch office in London about four years ago," said Mr. Walter C. White, of the automobile department of the White Sewing Machine Company, "and this office has done very well. We have sold a large number of cars in England, besides placing several on the Continent and through the British colonies. We have just completed a first order of six cars for Japan, and have had agencies established in both Mexico and Cuba for the last two or three years. In all these cases the export business has been good. Our business is steadily increasing in England and on the Continent, showing conclusively, to our mind, that American types of car can enter any of the markets and compete. This has been specially gratifying to us in England and France, and that is, to a large extent, the home of the explosive motor car."

The firm of Thomas B. Jeffery & Co., of Kenosha, Wis., reports having made sales during the past year in New Zealand, Australia,



ONE DAY'S SHIPMENT OF AN AMERICAN FACTORY.

South Africa, Siam and India, besides, of course, much more numerous shipments to England and the Continent.

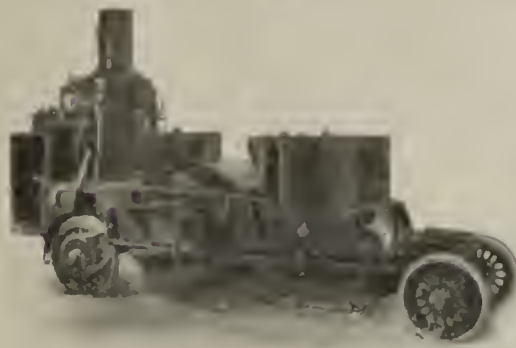
Japanese Club in New York.—Japanese residents of New York City have organized and fitted up a magnificent clubhouse at No. 44 West 85th street, for the purpose of bringing the Japanese business and professional men in New York into closer touch. Dr. Jokichi Takamine, the president, said, in speaking of the new club:

"As business relations between this country and Japan are becoming closer, it is the desire of our people to become better acquainted socially with the American people, and especially the people of New York. It will be our pleasure to entertain in the new clubhouse many of our American acquaintances, and reciprocate the many courtesies extended to us in this city."

Artificial Silk Industry in the United States.—Negotiations are in progress looking to the establishment of factories for the manufacture of artificial silk in the United States, for the purpose of developing that industry. The first factory may be built at El Paso, Texas.

AN AUTOMOBILE STREET SWEEPER.

The automobile street sweeper has made its appearance. It is to be given a thorough test by the New York Street Cleaning Department during the



present month, and if it proves equal to the great task of cleaning the streets of the metropolis it will be given a place in the department.

The machine combines the features of the automobile traction engine, steam roller and street sweeper. It is sixteen feet long, weighing four tons. The mechanism of the machine is protected by solid rubber endless tires of the largest dimensions, on artillery wheels. This also makes it noiseless while moving along the streets. The hubs are roller bearing and require oiling but once a season. The machine is steered by a hand wheel like an automobile.

The power for moving the machine and operating the rotary broom is furnished by a water tube boiler and a steam engine located at the rear. The engine is entirely encased so as to keep the moving parts clean and not to frighten horses. Oil is used for fuel, a five-hour supply being carried. Steam is used to generate the power and to suppress the dust raised by the brooms.

The machine travels at the rate of four miles an hour, and removes all the dirt and dust from the streets without the emission of smoke, dust or odor. It gathers all the dust into a receptacle, none of it escaping into the atmosphere. It is not necessary to wet or even sprinkle the streets, as the dust is dampened by a jet of steam as it is taken up by the brushes. For sanitary reasons alone this machine therefore should be a success, as it allows no clouds of dust to spread about and settle on persons in the street or to float through open windows into houses and offices.

The machine will do the work of forty men, and this, of course, demonstrates its economy. At a total cost of less than \$1 an hour, asphalt, wood, stone or brick paved streets are thoroughly cleaned at the rate of 18,000 square yards an hour with an eight-foot sweeper. The machines may be made with wider brushes. Not only are the dust and fine particles cleared from the streets by this machine, but also bricks and other heavy pieces of equal size and weight are picked up and deposited in the sweeper magazine, which is large enough to accommodate two cart loads of refuse. This magazine is dumped at the curb line without the loss of a moment's time. The machine is of iron and steel construction throughout. J. T. Collins, of Hartford, Conn., is the inventor, but C. H. Cooley, of the same city, improved the original machine, bringing it up to its present efficiency.

New steel fire-proof and robber-proof mail, express and baggage cars have been put into service on the Erie Railroad. Foreign members of the International Railway Congress have inspected them and approve their use, so that similar cars may soon be put in service on foreign roads.

A NEW SOLAR ENGINE.

Dr. E. P. Brown, of Cottonwood Falls, Kan., has designed a new solar engine to utilize the heat energies of the sun in pumping water for irrigation purposes. A clock arrangement keeps the reflector ever before the sun to focus the rays on the tubular boiler. A reflector twenty feet in diameter produces from four to six horse-power. Dr. Brown intends to utilize the electric motor in connection with his engine to store the



FIG. 1.—SOLAR ENGINE DESIGNED BY DR. E. P. BROWN.

energy. He will soon have his invention ready for commercial use.

Concerning solar engines, Dr. Brown, in the *American Inventor*, furnishes the following data:

"If all of the heat of the sun which falls on one square mile of the earth's surface were utilized in the generation of steam, it is estimated that there would be developed about 13,000,000 horse-power, and the heat utilized from a very few square miles would furnish power enough to supply the industrial world. Many investigators in all ages have turned their attention to the solution of the problem of solar engineering, and the overcoming of the great difficulties in realizing the small portion of this immense amount of sun power literally going to waste. The fuel we use is but the stored-up heat of the sun. Under the action of the solar heat the carbonic acid gas in the air is absorbed by the plant, the carbon becomes fixed, contributing to the growth of the plant, while the oxygen goes back to the air; consequently no sun, no vegetation, no coal. Coal is a fossil carbon, and on burning gives up the solar heat stored up in it. That celebrated engineer, Stephenson, on seeing a locomotive engine move, said it was not the coal which drove the engine but the sun's heat stored up in the coal, thousands of ages ago. Locomotives are the horses of the sun, and indirectly all engines are sun engines. It is, therefore, no paradox to regard the sun as the sole source of fuel in the past, as it must be in the future. For this reason great engineers, such as Euclid, Archimedes, Buffon, Herschel, Mouchot, Ericsson and others, have investigated the question of how to utilize a small part of the sun's heat in mechanical effort.

"The late Captain John Ericsson, of 'Monitor' fame, made quite a number of experiments and exhibited a solar engine in New York in 1884. Two of the most successful of the modern solar engines were devised by the Frenchman, Mouchot, and Captain Ericsson, and altogether they did excellent work as

far as it went. They were crude affairs, with many defects, and had no means whereby they might be made to automatically keep in the focus of the sun in its apparent diurnal or daily motion, and for these defects these engines could never prove of any practical value.

"In 1901 a solar engine was devised and constructed in Southern California, and it did good work for a time. This engine was quite a large affair, the reflector being somewhat over thirty feet in diameter, and made in the shape of a truncated cone, the reflecting surface consisting of a great number of pieces of glass mirror plate, placed together on the inside surface and concentrating the sun's heat on a tube-shaped boiler located within the central focal line. The amount of heat concentrated in the focus of this reflector was said to be enormous, and it was claimed that copper, a very refractory metal, could be melted in a short time, and a wooden pole thrust up into it was ignited instantly. All this is highly probable, as the writer has melted lead many times with a reflector constructed of ordinary tin plate, and any one can readily believe the old story of Archimedes setting fire to the enemy's ships by concentrating the sun's heat upon them with immense sun glasses. The reflector in the California machine was mounted similarly to an equatorial telescope—that is, with its axis parallel to the earth's axis, and after being adjusted so as to focus the sun's rays on the boiler the motion of said reflector could be maintained coincident with the apparent daily motion of the sun by an electric motor and clockwork mechanism. It was claimed that this motor produced about ten horse-power of useful effect ordinarily, but was capable of developing fifteen horse-power under the most favorable circumstances.

"The reflecting surfaces of modern experimental solar engines have been constructed of glass mirror plate, but as it is well known that the sun has a very deleterious effect upon the amalgam in glass mirrors, failure must sooner or later attend their use. All solar engines of any merit, as heretofore constructed, have had the boilers rigidly fixed in the focal line or point of the reflectors, consequently the boilers have the same motion as the reflectors relative to the sun, and said boilers having a position at night diametrically opposite to the



FIG. 2.—BROWN SOLAR ENGINE WITH REFLECTOR REVERSED.

position they had at morning, the water-level cannot be determined with absolute certainty. Any one familiar with the operation of steam boilers knows that it becomes a very dangerous proposition to carry steam under high pressure in any boiler without being able to determine the water-level. So solar engines having the boilers shifting with the reflectors

cannot ever prove successful, and must eventually meet with disaster.

"Another requirement which a solar engine must meet is the facility with which it can be protected in the time of storm. A large reflector projecting up into the air is a shining mark for the high wind and must be safely protected. Solar engines, to be successful, must meet these requirements, and more, they must be of simple construction and action, so that any ordinary engineer can operate them. The reflecting surfaces must be made of some reflecting metal unaffected by solar heat and light, and must have protection against storms. The boilers must be fixed stationary to be safe.

"With the solar engine, surplus power may be stored for use when cloudy days prevail, or at night for lighting or other purposes."

A UNIVERSAL CLOCK.

In almost every large city, some individual or corporation engaged in an international business endeavors to attract attention by displaying a series of clocks indicating the time in the various commercial centers of the world. These are always the center of attraction to a small throng of persons who are doubtless picturing in their minds our London cousins just about ending their day's work as we are beginning ours, or imagining our Philippine brothers revelling in the day which to us is yet unborn. This effort to display the world's time has heretofore been done by the use of a number of different clocks, each representing some leading capital of the world. That it would be possible to give all this information, and more, on a single clock face, seems almost incredible.

A timepiece which does all this has been devised by an Ohio firm, and is now attracting the attention and admiration of horological experts. The problem is worked out in such an exceedingly ingenious manner that it is the matter of but a glance to ascertain the time in any part of the globe. This marvellous clock not only shows the meridian time, but also the solar time. The information is constantly present on the face of the timepiece and no calculations of any character are necessary. This timepiece is known as the universal clock, and is also made in the form of a watch without increasing its size.

The watch is the standard design known to the trade as No. 18, but, as a matter of fact, any watch or clock may be made into a universal timepiece by the mere addition of a new face. The face of the timepiece is composed of two dials, a center revolving and a combination stationary dial. The center black and white dial, containing the twenty-four hours of the day, makes one revolution every twenty-four hours, always showing the correct time, and whether A. M. or P. M. at the twenty-four standard meridians and in all the countries and important cities of the world. The combination dial consists of the ordinary twelve-hour dial used for local purposes, the same as that of an ordinary watch, and a meridian or world dial showing the standard meridian with the figures of longitude, the international date line, etc., and indicating important cities and countries by dot and initial letter. In Europe, for instance, A stands for Athens; B, Berlin; C, Constantinople, and so on. In the United States N represents New York; W, Washington and San, San Francisco.

When reading the time of the world, the ordinary twelve-hour

dial and hands are ignored and only the black and white or revolving dial and the outer or world dial are used. The minute hand, however, shows on the ordinary dial the number of minutes after each standard hour for every standard meridian. Sun and standard time are read with equal facility; the only difference being that for sun time a straight line is followed from any city or locality to the center dial, while for standard time, the nearest standard meridian is followed to the center dial. For instance a straight line from the point indicating Honolulu to center dial will fall between 2 and 3 P. M.; her sun time is therefore thirty minutes after 2; her standard time is 2.01 P. M.

In explanation of the accompanying cut, the index hand No. 1 points to London or Greenwich. As the meridian of Greenwich is on the prime or starting meridian from which longitude is reckoned, it was also made the basis for the standard meridians. Being on a standard meridian, there is no difference between London's standard and solar time: center or black and white dial and minute hand on this cut show 1.01 o'clock A. M. No. 2 index hand points to the 75th meridian, west longitude, which is the standard for Eastern standard time in the United States (abbreviated East on dial). The figure on the center dial opposite this line always indicates Eastern standard time. On this cut, it is 8.01 A. M. Proceeding westward, the next meridians represent Central, Mountain and Pacific standards, respectively.

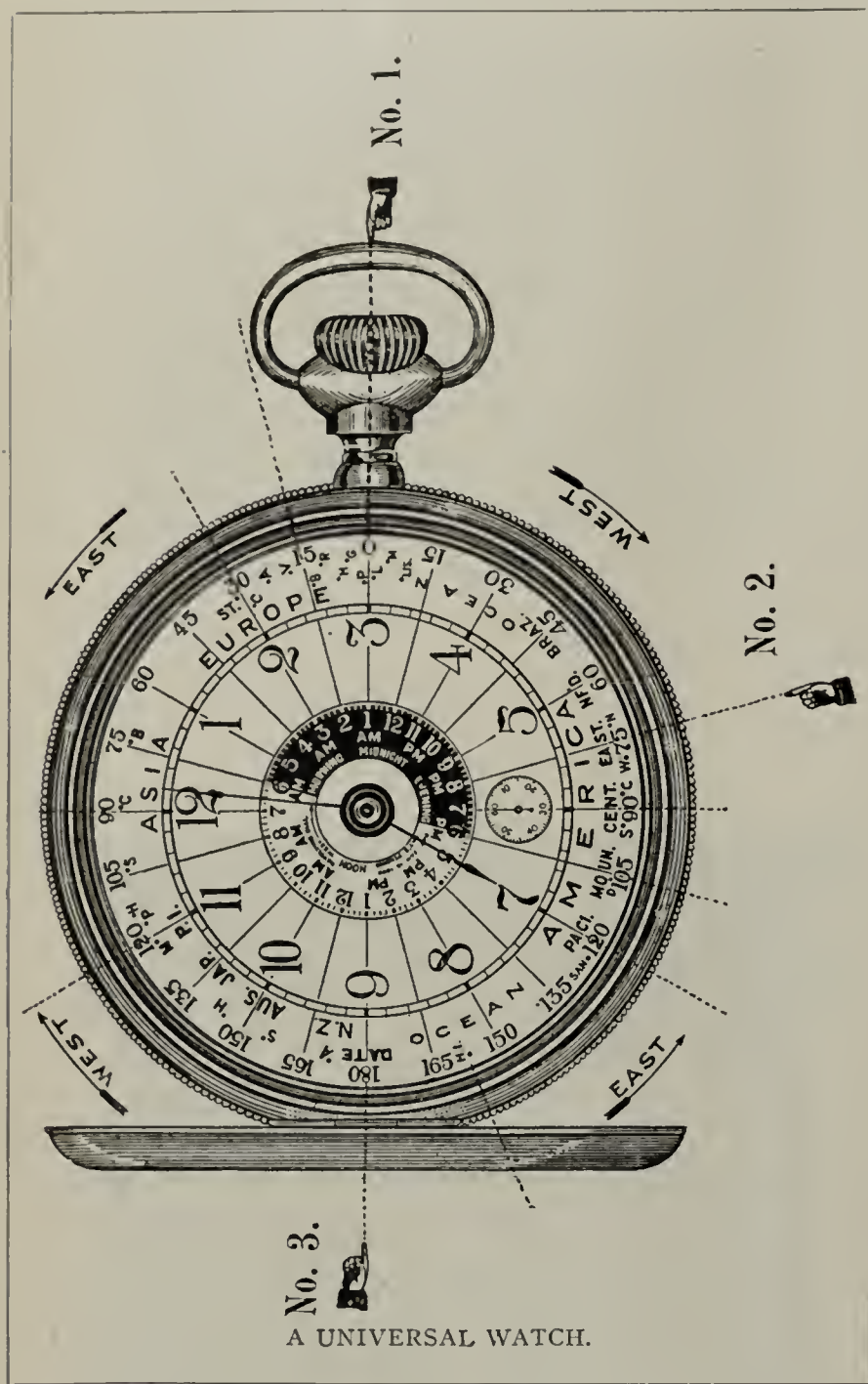
No. 3 index hand points to the 180th meridian, established about 1840 as the international date line; that is, the line or meridian where the old day ends and the new begins. The new day extends from this line west to twelve, midnight, on the center dial,



A UNIVERSAL CLOCK.

and the old day east from this line to twelve, midnight, on the center dial. When it is Tuesday west of this line to twelve midnight, it is Monday east of this line to twelve midnight. The new day is always growing longer and the old day shorter. On this cut, all of New England, Australia, Asia and Europe are in the new day and America in the old.

In view of the international relations which are enjoyed at the present time, this clock will fill a demand from commercial



bodies, concerns engaged in international business, students of science and the inquiring public generally. It will serve to make clear to the mind by actual demonstration the flight of time over the earth's surface and the birth and death of the day. The clocks are made in several different sizes, one of which is very large, adapted for public places such as railroad stations, while others are suited for use in the school room, office and home. The watches are also made in a number of styles and grades.

A map has been prepared on the same lines, which answers many purposes, but not so satisfactorily. It presents a North Pole projection of the world to the observer and all the prominent countries are shown, although somewhat distorted, as the exigencies of this character of map-making require. All the leading cities and other points are shown in their proper location as far as longitude and latitude are concerned. In making use of the map, it is necessary to set the dial in the center at the right time for the point at which the observer stands when the correct time at

all other points on the globe will be shown. Both maps and timepieces are supplied with a supplementary map of the United States, by the use of which the time in any part of this country may be accurately computed.

AMERICA'S TRADE GAINS IN THE EAST.

The volume of American exports to Asia has doubled within a year. Officials of the Department of Commerce and Labor, who have made a study of conditions, say the phenomenal increase is not due entirely to war conditions. It means that the quality of goods, conditions of shipment, time and cost in transportation and sale conditions have so improved that the people of Asia are transferring their trade to the United States. All indications point to a still larger increase in the next few months. The greatest increase during the last few months comes from China, where the war has no effect on American trade.

For the first nine months of the current fiscal year, the record of which is complete, American exports to Asiatic countries were more than \$21,000,000 greater than in any entire year in the history of the United States. The prospect now is that the total of shipments to Asia for this fiscal year will be not less than \$125,000,000. The largest amount of American merchandise ever shipped to Asia in any previous year was less than \$64,000,000.

During the first nine months of the present fiscal period the exports to Asia were nearly twice as great as those of the same months for the fiscal year 1904. The gain was nearly \$41,000,000. How far the war conditions in the Orient affected this commerce may be gathered to some extent, but not to a certainty, from the records of the Bureau of Statistics of the Department of Commerce and Labor. American shipments to Japan in the first nine months of the fiscal year have increased by somewhat more than \$15,000,000, as compared with the same months of last year. On the other hand, shipments to Asiatic Russia, which were already insignificant, decreased to \$155,272.

It will be seen, therefore, that although the total shipments of American goods to the Orient have increased in nine months by about \$41,000,000, the net increase to the two countries which are at war has been only about \$15,000,000. It may be a fair inference that two-thirds of the increase in cargoes to the Orient was due, therefore, to perfectly normal conditions, at least not to war conditions.

The great growth of American trade with Asia is being particularly noted in British financial circles. At the annual meeting of the chartered bank of India, Australia and China, Sir Montague Cornish referred specifically to the loss of British trade and to American gains. He said:

"I would call your attention to the remarkable development of trade now in progress between America and the Far East. From a recent report I gather that America's Eastern trade has grown from \$93,000,000 for the whole of 1903-1904 to the same figure for the eight months of 1904-1905, so that the trade for the latter twelve months promises to amount in value to \$150,000,000, or an increase of 60 per cent. in one year.

"Apparently, America aims at monopolizing the trade of the Far East. The American participation in foreign loans has been an unusual feature of the financial year. Besides taking a large slice of two Japanese loans, a Cuban loan and a Mexican loan have been appropriated by the New York financiers."

THE LATIN-AMERICAN EXPOSITION AT MADRID.

By Luis Pastor,

Chargé d'Affaires, Spanish Legation, Washington.

The proposed Latin-American Exposition, to be held in Madrid in 1906, will not do less than arouse the most enthusiastic sympathy and awaken the most endearing hopes in the souls of those who have not lost faith in the virility and admirable qualities of the Latin race, whose glory has not been dimmed by the work of time or the caprices of fortune. Our cities are as great in their history as they are in their present; disastrous wars, reverses of fortune, impassioned politics and civil discord—all united, have not been sufficient to crush the greatness of soul, the spirit of enterprise, the integrity of purpose and the sum total of intellectuality which everywhere remain as indelible evidence of the moral character of the Latin race. Faithfully preferring its delicate artistic sentiment and its veneration for literary refinement, Spain and the countries which constitute the continuation

manifested toward them by the mother country, but also of the marvelous enterprise and progressive spirit which have resulted in their founding, in their increase in population and in the expansion of the particular ideas of these times. On the other hand, we see that the Spanish flag still proudly waves over the numerous merchant vessels in all its waters as a symbol of the active and progressive spirit of its people. The harbor of Bilboa, the port of Gijon and the docks of Barcelona clearly indicate that warfare has not been the only direction in which Latin energies have been directed.

Madrid furnishes excellent conditions for entertaining within its limits an Exposition such as this promises to be. The fraternal welcome which the Latin representatives visiting the exhibition will receive from the moment they place foot on the Peninsula is assured beforehand.

THE MANUFACTURERS' ASSOCIATION.

The National Association of Manufacturers of the United States in its annual convention last month, at Atlanta, Ga., devoted considerable attention to the export trade of the United States. Secretary Cushing told of the various departments at work to increase the trade and the facilities offered manufacturers for extending their business.

Victor H. Metcalf, Secretary of the United States Department of Commerce and Labor, was a guest of the association and delivered an interesting address. He referred to America as a manufacturing country, saying its products equalled those of Great Britain, France and Germany combined. He said his Department intended to leave no stone unturned to increase the export trade by inducing manufacturers to make more strenuous efforts to push the sale of their goods abroad. The question of packing goods should be given especial attention, and he hoped the Department will succeed in its intended efforts to establish branches of American banking institutions abroad, so that collections may be more promptly attended to and credits satisfactorily arranged. The fact that the American home market is absorbing the greatest portion of the American output is the reason, he thinks, that greater gains have not been made in export trade, although the increase has been stupendous, notwithstanding the great American consumption. He believes the Department of Commerce and Labor will be a great factor in protecting and fostering American industries and products. The full text of Mr. Metcalf's address will be found in another column.

Perhaps the most striking address on foreign trade was that of Eugene N. Foss, of Boston, treasurer of the B. F. Sturtevant Company, on "Reciprocity, an Economic Policy and Its Relation to Our Foreign Trade." Mr. Foss was emphatic in reminding manufacturers that concessions must be made by the United States if American manufacturers are to receive fair treatment by foreign countries in the matter of customs. The following are extracts from his address:

"Is our foreign trade, now amounting to almost \$2,500,000,000 annually, of value to this country? What place does it occupy in our fiscal economy? Is it worth protecting and promoting? Can reciprocity aid us in protecting and promoting it?

"These are some of the questions I would like to discuss here to-day.

"Broadly speaking, there have been in the past only two alternative commercial policies: On the one hand protection, on the other free trade. This is no longer true.



SENOR DON LUIS PASTOR,
Chargé d'Affaires, Spanish Legation.

of its chain in the New World have produced in recent years an agricultural, industrial and commercial movement of such magnitude that the idea of holding a great exhibition in the capital of the ancient kingdom, where all the results of this impulse may be appreciated at a glance, must result in great practical consequences.

We are familiar with the greater part of the Latin-American republics and know the colossal enterprises brought to a happy consummation in a short space of time, enterprises which have created a network of railways, realized the exploitation of rich mineral districts, applied to the cultivation of the soil the most modern methods, and elevated its commerce to a marvelous height.

Magnificent cities like Buenos Ayres, Rio de Janeiro, Mexico and Havana are authentic proof, not only of the specific interest

"A third commercial policy is before us to-day and demands consideration. I am here for the sole purpose of defending reciprocity as a consistent and reasonable policy for the development of a nation—and persuading this representative body of American manufacturers that their largest and highest interests can be more perfectly safeguarded and developed by this policy than by any other; and that at the same time, by this means, the welfare of our people and the progress of civilization will be aided and advanced.

"Now by reciprocity we mean fair trade. We mean decent trade recognition of those nations which buy liberally of us, and thus become our commercial allies and make their prosperity our own.

"We hold that this true reciprocity is a much better economic policy than either that extreme form of 'free trade' under which the Englishman favors his worst commercial enemies, to the injury of his best friends; or to that remorseless abuse of protection by which we Americans adopt a still worse antithesis and assail our best friends with equal or greater vigor than even our worst foes.

"We hold that this true policy of reciprocity carries with it a considerable and sufficient measure of tariff revision. It will insure to the American consumer a reasonable opportunity to buy without being made subject to monopoly or extortion. It will also provide our producers the opportunity to sell throughout the world in fair competition.

"For our own country, this means a tariff adequate to protect our industries against such conditions abroad as are undesirable and un-American; yet low enough to enable our people to procure the necessities of life, and materials for manufacture, as favorably as their foreign competitors. Abroad, it implies friendly commercial conditions, whereby the products of the United States are admitted upon at least equal terms with those of other countries.

"This beneficent policy, by its sound and strong system of rewards and punishments, will powerfully promote the great fundamental causes of humanity the world over—not only commerce, but liberty, progress and peace. Under its sway labor will be really protected, not despoiled; autocracy and monopoly will be boycotted and strangled.

"While the greater countries of the civilized world, except Great Britain, have adopted our protective policy, none, except the United States, fails to accord to commerce its proper place as the handmaid of all other interests. No other nation incontinently and systematically strangles trade as a pernicious thing, under the gloomy and barbarous delusion that thereby industry must be benefited.

"There is nothing really original or startling in my position as a manufacturer on these questions. My present note of warning and appeal against the Bourbon faction has been struck repeatedly during many years by not a few of the very foremost manufacturers and merchants of this country and of this association—faithful, though reasonable and consistent, protectionists as well as the others, who are also numerous among us. This note is being now sounded with great and increasing strength by the same elements throughout the land, and cannot and will not be hushed.

"This means that the great ordinary industrial interests, those comprising the great bulk of all, are realizing more and more as the days go by that we are approaching, if we have not already reached, the condition of Great Britain 70 or 80 years ago. That is to say, our present and future dependence upon outside markets

for both the necessities of existence and industry, and an outlet for their products, is a matter of life and death to us.

"Unless we can have some adequate measure of reform and relief from this abuse of the protective principle, in the name of which so many crimes and blunders are perpetrated, we are bound utterly to fail in meeting not only many of our best opportunities, but the ordinary conditions that are rapidly coming to surround us.

"I say to you all seriously and earnestly, as one of yourselves and involved with you in a common fate, that we owe it to ourselves as well as to the country, to inquire whether we have not as manufacturers and as one of the greatest interests of the country, overplayed our game as far as tariff protection is concerned.

"I ask whether it is not a paramount duty and necessity, upon us especially, to rebuke and withstand the course of a pampered and privileged few, who are exacting from the people far more than they need or are entitled to, as a tribute for the purpose of excessive and illegitimate profits, to the injury of all the rest, financially, socially and morally?

"I understand, of course, that some of our opponents will welcome this plan as affording them the opportunity to maintain the Dingley tariff rates by adopting them as the minimum of the double tariff. It is to be doubted, however, if they will dare, at the last, to try this experiment. The temper of the American people will not stand for another copper of tariff taxation, while such a programme might prove worse than useless in its attempted application to foreign countries.

"Special legislation is desirable in the reduction or entire removal of duties on such staples, the necessities of life and industry, as are the special products of friendly and, especially, neighboring or American countries with which we have peculiar ties, commercial and otherwise.

"We need general and special legislation, again conferring upon the executive all possible constitutional power and discretion in the negotiation of treaties or entering into conventions in pursuance of this true policy of reciprocity; and in ratifying and enacting the same when completed. Modern conditions have disclosed the fact that one of the defects of our present system is its lack of flexibility.

"In conclusion let me say to you, that the responsibility is ours. What are we to do about it? How much are we individually willing to contribute to the proper solution of this momentous question? Has our attitude been wholly right in the past? If not, how much less so, for the future. Recently, in conversation, one of our most distinguished Senators said: 'The whole difficulty with the reciprocity programme is this: if we ask a body of manufacturers whether they favor the idea of reciprocity every hand will go up. If we ask them, again, if they want Canadian reciprocity, every hand will go up. But when we ask them how many are willing to sacrifice some degree, however small, of the tariff advantage they now enjoy, not a hand will go up.'

"Gentlemen, is not the Senator right? Has he not told us the truth? Until we approach this subject with an intelligent appreciation of its importance to our own immediate interests as well as its relation to the progress of our country and the welfare of mankind, and until we are ready to make whatever sacrifices are demanded, little will be accomplished. We manufacturers have it in our power to set this question right, not only for America but for the world.

"Shall we rise to this opportunity?

"Shall we avoid the imminent peril?

"Shall we accomplish a true and stable protection?"

The question of American railroad rates and the right of the Government to regulate them was referred to a committee to investigate the subject and lay the matter before Congress, reporting its finding.

The open shop, as opposed to the labor union control, was again indorsed. Mr. David M. Parry was reelected president.

AMERICAN COTTON MANUFACTURERS' CONVENTION.

The ninth annual convention of the American Cotton Manufacturers' Association, at Knoxville, Tenn., was fraught with interest to the cotton goods industry of the entire world. The cotton speculator and the attempt to curtail the American cotton crop came in for considerable scoring at the hands of members of the Association. Arthur H. Lowe, of Fitchburg, Mass., declared that what was needed was more, not less, cotton; to this end there should be a perfect relation between the grower and the manufacturer. A cotton speculator, he said, neither grows nor helps, but unsettles values. The world expects the cotton States of America to wisely discharge their duty in producing cotton. To plan to curtail crops, he declared, was a child of the speculator, and the policy was short-sighted and suicidal. The South needs more labor; its resources are already greater than it can manufacture, and already there is a cry for laborers to come over and help. He touched on the need of warehouses, better financial methods, better laws, more technically educated men, better methods of power application in solving present problems. If all plants were now operated at full capacity, the market would be supplied in a few months. More markets must be obtained.

Mr. George Hiss, of Charlotte, N. C., declared that the country needed trained men to represent it in foreign lands, that American markets might be extended. He closed with presenting a resolution, which was unanimously adopted, that the association memorialize Congress to consider the advisability of enacting a law providing for the creating of a college of commerce for the purpose of educating young men to represent this country as consuls and commercial agents abroad, with the object in view of extending our export trade. Each delegate is pledged to work for the success of the measure.

In his annual address, President Reinhardt entered into discussion of the development of the cotton industry during the past year, and concluded by predicting a great export trade. To the wide fluctuation in the price of cotton in America in less than a year, from 16½ to 6½ cents, he attributed the unsatisfactory demand for cotton goods. He advocated the enactment of a well-considered "merchant marine bill" and an augmented navy to protect foreign trade, which he believed is certain to follow the opening of the Panama Canal.

William Whittam, Jr., spoke on "Foreign Consumers of Export Goods and Their Requirements." He said:

"Upon the subject of exporting cotton yarns and fabrics and the attention we shall give it will depend our future national standing as cotton manufacturers. This trade in which we are all vitally interested is so vast in its ramifications that any, even feeble, attempt to cover it in anything approaching an exhaustive way would tax your patience beyond endurance.

"I sometimes feel that but few of us have any clear conception of either its magnitude or importance. In order to bring out the salient features of exterior markets, I will first present for your consideration the latest available figures.

"According to these, the manufacturing countries of the world export annually cotton cloth to the amount of approximately \$400,000,000, yarns valued at \$101,000,000, and miscellaneous products such as wearing apparel and other kinds of finished goods worth \$152,000,000, making the total reach the stupendous sum of \$653,000,000, and the demand is always grow-

ing, probably more rapidly now than at any time in the past. It is far from my intention to burden you with a multitude of figures, yet I cannot make my point altogether without their use. During the twelve months covered by the statistics I have just given you, Great Britain sold manufactured cottons in foreign markets valued at no less a sum than \$358,232,000, Germany coming next with \$79,524,000, and the United States sixth on the list, our sales abroad being the comparatively insignificant sum of \$22,404,000. We were also beaten by France, India, Switzerland, while even Japan, but a few years removed from absolute ignorance of factory manipulation, was but a paltry \$2,000,000 behind us.

"Owing to an unprecedented demand, we are now enjoying a period of almost if not altogether unheard of prosperity in the export section of the trade. But a comparison of the figures I have just cited, with those of four years ago leaves little room for self-congratulation. In that year the figures of the world's exports were a total of \$500,658,000, in which England participated to the extent of \$328,325,000, or 66 per cent.; the size of the American slice being \$23,566,000.

"This exceedingly unenviable position seems to me to be aggravated when compared with our relative standing as manufacturers; as such, we are second on the list, leading the next lower country by about the same per cent. as we are led by England. In any consideration of this subject the fact that we supply the bulk of our competitors with by far the greater part of their raw material ought to be kept to the front."

THE INTERNATIONAL RAILWAY CONGRESS.

The meeting of the International Railway Congress in the United States has been of great importance to the export world. In connection with this Congress an exhibition of railway appliances was held, which far surpassed anything in that line attempted heretofore. Everything of railway interest, from steam and electrical locomotives to office supplies, was on exhibition. The new electrical locomotives and the gasoline motors attracted the most attention, and several large orders were left behind for these types of locomotive power. The exposition was made up of seventy-one buildings filled with the exhibits of 375 manufacturers. Two thousand feet of railway track supported the engines and cars on exhibition.

The opening of this exhibit was made notable by two speeches, one by Mr. George Westinghouse, the famous manufacturer, and the other by the Hon. Paul Morton, Secretary of the Navy, formerly executive head of the Santa Fé Railroad. Mr. Westinghouse, in the following words, predicted the supplanting of the steam locomotive by the electric:

"A new era in railway operations has dawned with its many new problems. I refer to the growing use of electricity for the movement of trains. There have already been such demonstrations of the benefits to be derived from the substitution of the electric motor for the steam locomotive that it requires no great prophet to predict the extensive growth of electric traction upon the great railways of the world and the eventual replacement of the steam locomotive. Fortunately, the time element, which is such a controller of events, and the financial problems involved, will insure gradual development and extension of the use of electricity.

"With these changes have come vastly different engineering problems and new sources of danger, which should, and will,

command and receive that attention which is essential to the surmounting of every difficulty as it arises.

"The efforts of railway managers have been supplemented in a most extraordinary manner by a great body of engineers, inventors, and other managers of men and of affairs. They have very largely designed, invented, and perfected those machines and appliances which have wrought such wonderful strides in the development of our railways. They have built up great works for the manufacture of the material and machinery required by the railways, and without which the efforts of the railway managers, whose time is necessarily and rightfully engaged in the administration of their properties, would have borne a less important fruit; and it may be appropriately said, therefore, that the railway problem is well divided into one of construction and one of administration and operation."

Secretary Morton laid stress upon the railroad as a commerce builder, saying:

"The story of the transportation of this country and of the improvements in transportation facilities is the history of American progress. It is no exaggeration to say that the prominent commercial position of the United States in the world to-day is chiefly on account of its low railroad rates, and it is not at all out of the way for me to say that if it were not for American railway appliances, the cost of transportation in this country would not to-day be as cheap as it is. It has been estimated that where one dollar has been invested in railroads in the United States, the value of agricultural property has been increased \$10. The steel rail and the steam engine, with all the other railway appliances, have been pioneers in the development of this country. Many unknown sections have been prospected with a locomotive. The story of American railroads reads like a fairy tale. There are men living to-day in the United States who are older than any railroad. The railroad business is, relatively speaking, an infant industry, and yet see what has been accomplished. In less than one generation of men there has been a most remarkable abridgment of distance.

"To-day, with great luxury and comfort, and at a cost of less than 2 cents a mile, travelers accomplish in less than one hour what, sixty years ago, was more than a day's journey. There are three kinds of transportation—transportation of people, transportation of goods, and the transportation of thought, and in each it seems to me that we have led the world. As we look back fifty years and note the improvements in transportation, we cannot but anticipate what the progress will be in the next fifty years. No one can tell. We all know that a great many of the most remarkable men of the last century have been identified with the progress that has been made in transportation, and the names of such public benefactors as Stephenson, the inventor of the locomotive; Bessemer, who conceived the steel rail; Morse, who invented telegraphy; Pullman, who made travel by night more preferable than by day, and Westinghouse, who has increased the safety as well as the speed of the traveler, will always appear as prominent among those who have done much for the world in bringing about improved conditions.

"The railroad freight rates in the United States are low. No other country has any such cheap carriage of goods. There are very few complaints of rates in this country because they are

too high. Complaints of extortionate rates are the exception, not the rule. Rates are lower in the United States than anywhere else in the world. They probably aggregate 40 per cent. lower. This alone is something to be proud of; but, coupled with the fact that, with the lowest rates in existence, the wages paid by American railroads to their employees approximate at least 50 per cent. more than the wages paid to railroad men in other countries, and considered further with the fact that the American railroads probably pay higher prices for materials than any other railroads in the world, only serves to emphasize the triumph in transportation which has been achieved in America."

THE PHILIPPINE RAILROAD PROJECT.

Secretary of War Taft, who will conduct a party to the Philippines next month to study the needs of those insular possessions, will bring home with him the plans for the system of railroads that are to be built by American capitalists under Government supervision. While in the Philippines, Secretary Taft will meet representatives of the financial forces back of the project, together with the Philippines Commission, and a preliminary agreement will be drawn up. Once the plan of building is approved, no time will be lost in giving the Philippines a railroad system that will bring its principal towns and cities in connection with the seaports and connect all the important commercial countries. The railroads will develop the mines and agricultural industries and give employment to thousands of laborers. It will, in fact, open up the islands to exploitation and make out of the Filipino a self-sustaining workingman, or crowd him out of the race. The agreement under which the roads are to be built will stipulate that native labor be employed, and this will bar the importation of coolies from China and Japan.

While the completion of the entire scheme will take several years, it is hoped that a substantial portion of the system will be under way within a year. Most of the railroad system will be built in Luzon. Twelve hundred miles in all are planned. The Manila and Dagupan line is to be extended from Dagupan along the west coast to Laoag at the north end of the island, opening up the Ilocan provinces. A second line is planned through Carvallo Pass to Aparri, at the extreme northern end of Luzon, a stretch of about 250 miles. Other lines will be from Le Gaspi to Pasacao, branching to Tabaco, and in the islands of Panay and Cebu. Steamship lines will connect the islands, making through passenger and freight connections.

With the completion of these lines will come a heavy import and export trade. American manufacturers will be able to put their goods into the interior of the islands at reasonable transportation charges and the fine woods, hemp, sugar and other products will be brought to the seacoast, and on to the United States, thus building up a trade that in time will run high up into the millions.

No doubt American farmers will be induced to emigrate to the islands and take up the pursuit of agriculture, and American capital will flow into the island industries, thus augmenting the native production and stimulating the natives to greater endeavors. What the influx of American capital, miners, ranchers, railroaders and cattle growers did for Mexico will be repeated manyfold in the Philippines. Within a few years the prosperity of the islands will be assured.

PRESIDENT ROOSEVELT'S FOREIGN POLICY.

President Roosevelt's recent public utterances are of world-wide import. He has freely discussed the position of America in the congress of world powers, and frankly says the United States intends to do its part in the upbuilding of the world and the betterment of international trade and intercourse. He openly and forcibly advocates a big American navy. In addressing the members of the Merchants' Club, at Chicago, he said:

"I need not say to those of you who know anything of me at all that I believe in a big navy; and I hope I need not say that I believe in it not as a provocative to war, but as a guarantee of peace. And I want to say every section of this country realizes that the navy stands for the whole country, and that the people of the seacoasts are not a particle more interested in it than the people of the Mississippi Valley. There were two sides to the establishment of that naval station where it was established. In the first place, we got, as perhaps some of you know, a peculiarly valuable class of recruits for the navy from the Mississippi Valley and the regions adjoining the Great Lakes. In the next place, I wanted to see part of the establishment of the navy have its local habitation or name here in the great West. And so I feel that this organization conferred a favor not only upon the city of Chicago, but an advantage to the whole country in what it did toward securing the establishment of that station here where it has been established.

"I do not think that it is now very necessary to make an argument for an efficient navy. We are so fortunate that in this country we can get along with a very small army; an army, which, relative to the population of the country, is smaller than the police force of any one of our great cities. With the navy the case is different. We have not the choice, gentlemen, as to whether this country will play a great part in the world; we cannot help playing a great part. All we can decide is whether we will play it well or ill; we have that to decide. We can consider whether we will do badly or well, but we cannot decide whether the parts are to be played; we have got to play them.

"We cannot abandon our position on the Monroe doctrine; we cannot abandon the Panama Canal; we cannot abandon the duties that have come to us from the mere fact of our growth as a nation, from the growth of our commercial interests in the East and the West, in the Atlantic and on the Pacific. Now, I earnestly hope that with the added responsibility will come not merely a growth in power to meet that responsibility, but a growth in sobriety of mental attitude on our part toward these new duties. If there is one thing that ought to be more offensive to every good American than anything else, it is the habit of speaking with a loose tongue offensively about foreign nations, or of adopting an ill-considered and irritating attitude toward any one of them.

"In private life there is not one to whom we rightly object more than the man who is constantly offending and insulting his neighbors, except to the man who in addition to that then fails to make good. Now, I hope to see our foreign policy conducted always in a spirit, not merely of scrupulous regard for the rights of others, but of scrupulous courtesy toward others; and at the same time to see us keep prepared so that there is no position that we take in either hemisphere that once taken we cannot stand on. In that attitude, not only is it important that the Government officials should behave themselves, but it

is important that private citizens should. The public speaker, the writer in the press, the legislator, or public servant, all owe it to this country to behave with the courtesy toward others which we would like to have extended in return to us; but behave with that courtesy whether it is extended or not. The outsiders cannot hurt us by being insolent as long as we behave ourselves, and what they say is of no consequence to us compared to what we say of them.

"Hard words won't hurt us if we disregard them. Let them say anything and go on and build up the navy. That will be a much greater provocative to friendship and respect than any amount of recrimination; and so I have a right to appeal to the men here before me, to the men who in so many different walks take the lead in this great city, to aid in consistently building up just that type of foreign policy—a foreign policy under which we shall make the name of the United States Government an example on one hand, as it ought to be, for a just and proper insistence upon its own rights, but also an example for a disinterested and generous willingness to treat all other nations, all other powers, with frank courtesy and good will, and to make it evident that in this country's foreign policy it recognizes its duty toward the weak just as much as its responsibility to the strong."

AMERICAN INFLUENCE ON JAPANESE PROGRESS.

The rapidity with which the Japanese Empire has emerged from obscurity and taken its place in the front rank of nations has astonished the world. Its prowess in battle, the direct result of its application of modern methods, is now the subject of universal comment. In view of these things, the following extracts from an address recently delivered before an American audience by Mr. Eki Hioki, First Secretary of the Japanese Legation, at Washington, are very significant:

"Americans should be proud of the wonderful skill in diplomacy displayed by your first envoy to Japan, our honored Commodore Perry, and the brilliant success which was achieved by him in inducing a nation which had so long cherished the policy of seclusion and exclusion to enter into treaty relations with the powers of the world, the accomplishment of which was brought about without the shedding of a drop of blood or even the happening of a single incident which could now revive any unpleasant memories. I am often led to reason, rightly or wrongly, that when an act of a man is founded on truth and kindness there is no need of the help of language to communicate it to others. The conduct of the first American envoy to Japan, as well as those who followed him, was singularly marked with truth and kindness, and it is gratifying, indeed, to know that the annals of the five decades of international relations between Japan and the United States are clean records of friendliness and cordiality. In this connection, it is pertinent to quote from the writer of a little volume called 'Agitated Japan,' who commenced his work with the following words:

"Without the least taint of flattery, it may be safely asserted that Japan is indebted to no other country so much as to the United States. This indebtedness began on her first trial of that international intercourse which she has kept up ever since, and will doubtlessly continue as long as the world shall last. It is an undeniable fact that the honor of having

opened the hitherto secluded Empire of Japan to foreign intercourse, commercial and otherwise, rests with the United States.'

"On July 11, 1901, a monument was erected in memory of our revered Commodore Perry at the spot where he held his first conference with the Japanese authorities. It bears an inscription composed by Marquis Ito, the most prominent of our living statesmen, recognizing in appropriate terms the services of that gallant sailor and shrewd diplomatist. On the occasion of the dedication of the monument the chairman of the committee in charge said in his address: 'It was at this spot that the modern civilization of our Empire had its beginning. * * * When Commodore Perry set his foot on this shore the Japanese Empire was enshrouded in the fogs of a seclusion of nearly three hundred years. * * * This monument is erected to preserve in stone our determination never to forget the friendship of the United States that sent Commodore Perry to induce us in a peaceful way to have intercourse with foreign powers.'

"Such is the memory that the Japanese of to-day cherish. Indeed, the more we study the magnitude of the transformation that Japan has undergone since the advent of Perry, the higher becomes our appreciation of his work and the part played by the United States in regard to Japan. If the country had been forced open by any means but peaceful, nobody knows where that little Empire would stand to-day. Were it not for the policy the United States patiently and firmly pursued toward the upbuilding of new Japan, it is impossible to realize what progress she would have made. I am happy to acknowledge frankly our sense of indebtedness to you, and I am proud to say that your kind assistance was not in vain."

Mention was made in the May number of the AMERICAN EXPORTER of the visit of Baron Keneko to the United States on a tour of commercial investigation, and of his remarks concerning American trade in Asia. At a banquet in New York, Baron Keneko advocated a commercial alliance between the United States and Japan, saying:

"The detractors of Japan have said that we deplored the coming of America to the Philippines. This is untrue. We were glad to witness her entrance into the Orient. We never want to see America withdraw. On the authority of Japan and the people of Japan, I say to you that we love you, and will never let you go out of the East, because we want you to help us civilize Asia and introduce American-Saxon ideas there.

"It has been said of us that we do not look with favor on the increase of your navy. I say to you that we ardently desire its upbuilding, because you are our good neighbor and best friend.

"After the war I believe that an economic alliance between America and Japan should and will be established. Japan, with the racial and linguistic similarities existing between her people and the people of China, can assist you in extending your trade. America, with her capital and her business experience, can be of vast aid to us. The establishment of reciprocal relations on the basis of economic lines will mean that the whole of Asia will be in our grasp. It will mean an open door in China and the blocking of the plan of dismemberment of the Celestial Empire."

American Hardware in Argentina.—American hardware is fast gaining a footing in the Argentine Republic, owing to the fact that the exact needs of the people of that country has been made a matter of special study by American manufacturers, who are now turning out the exact kind of hardware and tools required.

THE PARCELS-POST AGREEMENT.

The provisions relating to the character of parcels to be admitted to the parcels-post under the recent agreement between the United States and Great Britain have just been made public by the Treasury Department of the United States. Arrangements now existing under the Universal Postal Union are not disturbed. All articles ordinarily admitted to the mails under any conditions in the internal revenue service of the country of origin and country of destination, will be admitted under this agreement unless specifically prohibited.

Each article must be so packed as to allow post and customs officers free and easy access to determine their value. No parcel weighing more than four pounds six ounces, or valued at more than \$50, will be accepted. The greatest size acceptable is three feet six inches in length, or six feet in length and girth combined.

The following articles shall not be sent by post: parcels containing letters or written communications; live animals; dead animals, except insects or reptiles when thoroughly dried; fruits and vegetables that decompose quickly; publications violating the copyright laws; poisons; explosives or inflammable substances; liquids and materials which easily liquefy; lottery tickets or advertisements; obscene or immoral publications, or articles violating the laws of either country or making the handling of the articles unsafe.

The sender of each parcel must first make a customs declaration in proper form, giving a general description of the parcel and an accurate statement of its contents and value, the date of posting and the sender's signature and address. This declaration must be attached to the parcel.

Upon receipt in the country to which it is forwarded, the customs officials will collect all the duties prescribed by law in the usual manner before delivery of the package. If the package cannot be delivered, owing to faulty address or otherwise, or is refused by the consignee, the consignor shall be notified through the post-office department of the country of origin and asked to advise as to its disposal. If no instructions are received within sixty days, the package will be treated as though abandoned and be sold for customs charges.

If, however, the goods are perishable, they will be sold at once, and after all charges are paid the remainder will be subject to the order of the sender. If a sale is impossible, the articles are destroyed by the customs officials. If a package should be returned to the sender or redirected to a third country, the customs charges are canceled both in the United States and in Great Britain. This redirection applies only to parties who have been in the country and departed for another, or who have returned to the country of the package origin. The redirection must be done by the post-office officials and the package must remain in their custody.

Undelivered packages, as heretofore, will be returned to the country of origin without the collection of duty if they are not liable to seizure for violation of law. Packages exchanged under this convention are subject to all the laws and treasury or customs regulations of each country.

New York's Manufacturing Census.—New York City has 39,776 factories, with \$922,000,000 capital. These factories pay out \$245,000,000 yearly in wages to 462,763 employees. The value of goods manufactured each year is \$1,371,000,000.

THE PANAMA CANAL AND THE POSSIBILITIES OF TRADE.

Hon. John Barrett, formerly United States Minister to Panama, but recently transferred to Colombia, writing in *Channon's Review* of the advantages to international trade resulting from the opening of the Panama Canal, says:

"I hope I shall not be classed as a dreamer or an enthusiast because I outline such possibilities as these. Ten or eleven years ago, when I had the honor to be a United States Minister in Asia, I emphasized the importance of the commercial position of the United States in the Far East; I urged upon American exporters and manufacturers to improve that great field and I prophesied a vast increase in our shipping and trade relations with the Orient; but my statements were more often met with ridicule than with appreciation. The passing of years, however, demonstrated the truth of all that I outlined. In less than a decade, actual conditions surpassed my most hopeful expectations. Many people are now classing me as an enthusiast, because I believe that the opening of the Panama Canal will change the great commercial map of the world. But I am just as confident that my premises are correct and my conclusions not overdrawn as I was convinced ten years ago that my opinion in regard to the trade of Asia was not exaggerated.

"The opening of the Panama Canal means that the central portion of the United States will have direct access to the commerce of the Pacific Ocean, which now amounts approximately to two billion five hundred million dollars (\$2,500,000,000) per annum. This comprises the trade of Japan, China, Korea, Siam, the Philippine Islands and the East Indies in Asia; Australia, New Zealand, Tasmania and Polynesia in the South Pacific; Chile, Bolivia, Peru, Ecuador and Colombia on the west coast of South America; Costa Rica, Guatemala, Nicaragua, San Salvador, Honduras and Mexico on the west coast of Central America. The share of the United States in the trade of these countries does not now exceed \$300,000,000, or not 12½ per cent. of the total. I venture to predict that within fifteen years from the completion of the canal the share of the United States will be nearly 45 per cent. Taking into consideration the natural increase of the commerce of these countries, we can place the total trade of the Pacific in twenty-five years (fifteen years plus ten years for construction of the canal), at \$5,000,000,000 per annum. Provided the United States takes advantage of the situation, we should in 1930 have a commerce on the Pacific worth \$2,000,000,000. This sum of increased trade would pay for the cost of the canal nearly ten times over.

"Let us remember further that there are six hundred million people living in countries debouching on the Pacific Ocean. The wants and demands of these peoples are growing every day. The more they come into contact with the United States and Europe the more it takes to provide for them. The material development of the countries holding this population must be almost incalculable during the next thirty years. It is no exaggeration, therefore, to estimate \$10 per head as a reasonable multiple for their foreign commerce. This nets us a grand total of six billion dollars (\$6,000,000,000). That \$10 per head is not excessive is proved by the fact that the foreign trade of the United States amounts to nearly \$40 per head.

"We can supplement this general statement by an individual case. The population of China, conservatively estimated, is now

three hundred and fifty million. Her annual foreign trade is approximately \$350,000,000, or only \$1 per head. If Japan has developed her foreign trade from \$1 to \$10 per head in 30 years, and if the United States has advanced her own to \$40 per head, it is logical to conclude that China's foreign commerce will be worth at least \$10 per head in another 30 or 40 years. This would give us the magnificent total for China alone of \$3,500,000,000, without taking into consideration increase in population. And so I might go on giving evidences of the innumerable advantages that must come to the United States when the Panama Canal provides a direct commercial waterway to the countries and peoples of the Pacific Ocean."

COAL THE BASIS OF COMMERCIAL SUPREMACY.

The United States is the greatest coal producer in the world, having mined last year over 350,000,000 tons. In the last half-century the volume of coal mined in the United States has increased 4,180 per cent.

Since 1899, when the United States passed Great Britain in the quantity of coal mined, all lines of business have developed so rapidly that the United States now holds the recognized commercial and industrial supremacy of the world.

More and more as machinery plays its increasing rôle in the workshops of production, experts say it is certain that that nation which possesses the largest supply of accessible coal will dictate the economic policy of the world. The United States not only possesses the greatest coal areas, but by the employment of the newest labor-saving devices in the mines, obtains its product at a cost greatly below that of Europe. Abroad the price of coal per ton at the pit's mouth varies from about \$1.85 in Great Britain to \$2.40 in France. In the United States the average price last year was \$1.16.

The introduction of labor-saving machinery in American coal mines has been a notable feature of the past few years, and has added to the advantage which the American producer has over the foreign. Within ten years the number of coal-cutting machines in use in this country has increased over 600 per cent., reducing the cost of mining by from 15 to 30 cents a ton. In 1904 there were more than 7,000 undercutting machines in use in bituminous districts. The effect of the greater use of machinery in increasing the output per man in the mines is seen in the fact that, while the average production per day in the anthracite region in 1890 was 1.85 tons, and in the bituminous region 2.36 tons, in 1903 the average production was 2.41 tons and 3.02 tons, respectively.

The great and continuous increase in the production of coal in the United States illustrates strikingly our industrial development. In 1850, with a population of 23,191,876 persons, 6,445,681 tons of coal were mined, the production per capita being 0.278 tons. In 1903, with an estimated population of 81,000,000 the production was 357,356,416, or 4.4 tons per capita. In the ten years between 1894 and 1904 the coal output of the country more than doubled.

History and Manufacture of Floor Coverings (Review Pub. Co., N. Y., \$1) is the first book that has appeared on this interesting subject. It is a useful compilation of salient facts interesting both to the trade and to the curious. It briefly sketches the history of carpet making and describes the various kinds on the market. Linoleum and other varieties of floor coverings are similarly reviewed. The volume is attractively illustrated.

ORGANIZATIONS FOR SPANISH-AMERICAN TRADE.

American manufacturers, merchants, sales agents, steamship owners and export brokers have amalgamated their interests into a commercial association to further American trade with South American countries. Realizing that this trade virtually belongs to the United States, the association has been launched for the express purpose of securing it by combined effort.

Argentina, Uruguay and Paraguay are the particular countries on which this, the River Plate Association, has its eye. But the organization is bound to expand; with its expansion will come the broadening of its sphere of activity, and all South America will profit by the work begun between these three countries and the United States. At present there are five steamship lines with eight sailings a month between New York and the River Plate countries. Numerous sailing vessels and tramp steamers also engage in the traffic, and all carry full cargoes. But the trade is not as great as it should be, and cooperation will work wonders.

All American manufacturers and exporters have been invited to join the association, and many are responding to the following circular, which was sent out in May:

"The undersigned firms interested in the export and import trade with Argentina, Uruguay and Paraguay are agreed as to the desirability of forming an association to be called 'The River Plate Association.' The object of this association is to aid and assist by organization and mutual cooperation the healthy growth and development of export and import trade between the United States and the River Plate countries.

"One obvious sphere of effort for the association would be to bring such influence to bear on the Congress of the United States as might induce it, either through a revision of the tariff or the approval of reciprocity treaties already favored by the executive department of the government, to facilitate the direct commercial exchanges between the River Plate countries and the United States.

"This is a question which vitally affects the interests equally of American manufacturers and import and export merchants, since the logical result of the removal of existing barriers to the interchange of commodities would be a large increase in the demand for goods of American manufacture, more regular and efficient steamship service, and more economical banking arrangements for South American business.

"It would be a necessary supplement to the form of activity above outlined that the association should watch all legislation likely to affect in any way our River Plate trade, and, so far as possible, to influence and guide it into channels fitted to yield practical and beneficial results.

"Such an association as is proposed would furnish a convenient agency for the ascertainment and distribution of information affecting the interests of its members.

"The improvement of the capacity and commercial activity of the consular service in the River Plate countries would be an equally appropriate part of the function of the association.

"The cultivation of social relations among the members, with a view to the formation of a beneficial acquaintance and intercourse among those having interests and pursuits in common with this

department of our trade and commerce, would be naturally incidental to the purpose of the proposed organization.

"The association is not intended to be used for the furtherance of the interests of any individual, firm, company or combination, but solely in the interest of trade in general between the countries in question and the United States."

This circular is signed by the following well-known New York firms, who are pushing the organization with vim and energy:

Busk & Jevons, Corner Bros. & Co., Barber & Co., Inc., John Dunn, Son & Co., William E. Peck & Co., Agar, Cross & Co., Edward Haynes, John C. Seager Co., the Hale Co., Norton & Son, Waller & Hughes and the American Trading Co., represented by Thomas A. Eddy, who is the Uruguayan consul in this city.

Mr. Eddy is particularly active in the organization and believes it will become so strong that its field will be enlarged to include other South American countries in its scope. He has called to the attention of American manufacturers the large field in the River Plate countries for building up a large and profitable trade in agricultural implements, machine tools, electrical appliances, railroad equipment, office supplies and systems, manufactured cotton and woolen goods, oil, lumber and other American products.

Most American industrial successes have been accomplished by similar combinations and the traders and manufacturers back of the association believe it will soon be numbered among the powerful commercial bodies of the world.

There is absolutely no reason why American goods should not be popular in those countries. With Governmental assistance in the way of reciprocal tariff agreements and the subsidy that sooner or later Congress must vote to American-built ships carrying the American flag, trade should be quadrupled. As this association intends to foster the import business as well, it will be simply a bargain to buy and sell. With the River Plate countries buying American products and the United States absorbing a big share of those countries' products, it means prosperity of traders both there and in the United States.

Right upon the top of this movement for an organized commercial invasion of the South American countries comes an educational scheme to make the people of the United States and of South America better acquainted. Senator George B. Griggs, of the Legislature of the State of Texas, is pushing this idea, which contemplates the establishment of a Pan-American trade college on the border line of Texas and Mexico. A special committee of the Legislature has just made a voluminous report on the subject favoring the plan and appealing to the Federal Government to use its influence to bring the plans to fruition. The committee outlines its plans thus:

"It is proposed that somewhere upon the gulf coast of Texas, easily accessible to transportation both by land and sea, to establish a Pan-American trades college. An institution to be under the control of an inter-American board of supervisors—a Government institution in which the United States and all the other American republics are or shall be interested, and by them fostered; an institution where the languages, habits, customs, wants and needs of the various people are taught and exemplified, and where there will be upon permanent exhibition and display the goods, merchandise, machinery, instruments, implements, utensils, wearing apparel, and in fact everything used by the people of

those countries; also all sorts of articles manufactured or produced in the United States that would be or become salable in those countries.

"Here in the United States merchant or manufacturer could easily ascertain what articles he could make or produce especially for those southern markets, regardless of the salability of the same in the United States. The people of those countries would soon learn, by reason of the introduction thereof, to use many of the articles in common use in the United States, instead of the inferior articles to which they have long been accustomed.

"To this institution would come the young men and women of the western hemisphere for that business education that would qualify them either to enter business for themselves or to act as agents and salesmen in any of those countries for the merchants and manufacturers of the United States. The intermingling of the 'Trans-Americans' in college and in business and in the social world would bring about the desired condition quicker than a hundred steamship or railroad lines. In fact, we will not have much need of steamship or railroad lines to those countries until this condition is brought about.

"The most important feature of such a trades college would evidently be a collection and the permanent exhibit of all manufactured articles in general use in the Spanish-American countries, as well as a selected exhibit of all American articles in common use in those countries, and such other articles as American manufacturers might reasonably hope to export in paying quantities.

"Regarding those articles into the preparation of which only the simpler manufacturing processes would enter, the form of packing ground spices, oil, meats, etc., the widths, lengths, patterns of cloth to meet the customary demands in each of the several countries, the fashions of popular demands in drugs, tobaccos and numerous other articles, the success depends upon exact knowledge which renders goods acceptable to those people. Furniture and leather goods depend for sale upon such fashions, which vary very much from those of the United States. For instance, European hat factories make all sorts of hats, entirely unsalable in Europe, but precisely what is wanted in South America and the other countries. They have learned the art of packing with a view of shipment into the interior, where goods are sometimes packed upon mules.

"The American manufacturer would not only learn all of these things at such an institution, but he would see upon continual exhibit all branches of common articles of domestic consumption in the South American countries, all of which would constitute quite an important exhibition. The study of languages, trades, methods, usages, social habits, manners and customs of the people would be the most important feature of the institution. It would be visited by manufacturers from all parts of the United States for information. Such an institution would likewise furnish information of the breeds of animals used in these countries with a view to teach American stockmen how stock improvements could be ventured upon in those countries. In conjunction therewith the various exhibits and means of information would form an inducement to the young foreigners to learn which of those they could introduce as improvements in their own countries, or take as a basis for adaption to be made.

"With the Latin-American countries at her feet, willing and anxious to enter upon more friendly trade relations, affords, we believe, America's great opportunity to quickly achieve her richly

deserved commercial supremacy of the Western world by promulgating and fostering a Pan-American trades college, as herein suggested.

"The governments of the South American countries are to be sounded on the proposition through the usual channels. Should this great college be established, it would quickly become a Mecca for the young merchants of the Western world who wish to become schooled in the needs of international trade on the American continent."

IRON AND STEEL EXPORTS.

Foreign and domestic orders for American iron and steel products continue to pour in. The big American manufacturing concerns are fairly overrun. Every available factory, every machine and every means of production are being pressed into service. The industrial revival is overwhelming. Manufacturers of agricultural implements, machinery and tools are besieging the steel works for material. Blast furnaces are running to their fullest capacity. The rail and structural iron and steel mills have doubled and trebled their output and yet the cry is for more.

Sixteen new furnaces have been blown in within a month, but the continued pressure will cause some to go out for repairs, as they are being strained to the limit. The production per month now is averaging 2,000,000 tons of pig iron. This means nearly 24,000,000 tons for 1905. It is a foregone conclusion that 1905 will break all records for production and consumption of pig iron, the highest previous year's production being about 19,500,000 tons. The greatest production is on the part of furnaces belonging to steel works whose product in the shape of pig iron does not find its way into the market but is immediately fabricated into ingots, billets and finished shapes.

The strange part of the situation is that it was the finishing mills of the country that first became congested, rather than the blast furnaces. It had been expected that demand for pig iron might easily exceed the domestic production, because finishing mills have been enlarged and multiplied much more rapidly than blast furnaces, but it was not expected that the ultimate capacity of finishing mills would be reached for several years to come.

On every hand are seen strenuous preparations for increasing the producing capacity of both furnaces and mills. New mills are being built, particularly in Pennsylvania and Ohio. The inevitable result of this increase in mill capacity will be overproduction at some period in the future after the present boom has subsided, resulting in the downward swing of the pendulum of prices.

Conditions like this make steel either a prince or a pauper, and the prime reason for this condition is the fact that it is the custom of railroads to curtail buying rails, cars and equipments and to reduce to the lowest point every item of expenditure during prosperous years. The railroads are the leading purchasers of iron and steel to-day, and, with the exception of rails, which are the same price as they have been, are paying from \$5 to \$10 a ton more for the materials than they could have bought them for a year ago, and are in addition suffering all kinds of inconvenience because of the inability of mills to make prompt deliveries.

The foreign demand for bridge steel and rails has mounted upward in the last ninety days, while machinery and tool orders are increasing rapidly. This, added to the home demand, has put every iron and steel concern in the country into operation to the fullest capacity. The fact that all the present iron and steel com-

panies are prospering and are not able to care for the increasing demands has brought new capital into the field and the United States Steel Corporation will have to divide business with the newcomers. One corporation has already purchased 600 acres of land near Pittsburg and will invest \$1,500,000 in the business. This is the best indication of future demand. Within half a year these new mills will be adding to the supply of iron and steel bars, ingots, slabs and rails, and will in a measure overcome the delay now incident to new business.

For 1906, there are already estimates being prepared of the amount of business that may be expected, which is large. These estimates are predicated on the new enterprises that are announced for execution, and which embrace new and extensive trolley lines coupling towns and cities, double-tracking of important lines of railways in the West and South and North as well as in the mid-West of the United States, together with an ever-increasing foreign demand. The supply for large building projects, agricultural implements, shipbuilding (which is expected to create a large demand for steel in various forms within the next year) and the normal demand for new buildings in cities and towns, renewals, bridges for railroads, towns and counties, and in all the multifarious forms for which steel is used and for the purposes for which it is being applied that are entirely new, are taken into account. As iron and steel constitute the barometer of American trade, it is readily seen that the greatest business revival in American history is now in full swing.

ELECTRICITY FOR RAILROAD OPERATION.

One potent result of the International Railway Congress held in Washington last month, was the decision, by a consensus of opinion, that electricity will soon supersede steam power. It is already taking the place of steam locomotion in the suburban passenger service, owing to its economy and increased efficiency. In the United States, the railroads are rapidly buying up competing trolley lines and establishing electric service traffic departments. The New York Central is adopting electric locomotives for its suburban business, and will use them to haul all its passenger trains in and out of the city. The New York, New Haven and Hartford will do likewise. This road also owns most of the electric suburban roads that parallel it or operate in its territory, and has abandoned steam propulsion on several divisions in favor of electricity. The Long Island Railroad, running from New York to Montauk Point, the entire length of Long Island, is being changed into an electric road, and will abandon steam locomotives. Other roads throughout the United States are doing likewise.

The heavy suburban demands at present are beyond the capacity of steam locomotives, and the motor-car trolley and third-rail systems are rapidly taking their place. The service is better, is more satisfactory to the public, and is bringing a profit to railroads where they formerly sustained a loss.

Some railroads have been making improvements in the equipment used in suburban service. The character of the cars employed has been improved, and in order to increase the speed at which trains can be operated there has been a large increase in the weight of locomotives. Even these costly improvements are not meeting the competition of electric lines, and if the full earning power of this traffic is developed the adoption of electricity as a motive power is imperative.

Some of the benefits which are derived from this change are given by a recent writer in a technical journal, as follows:

"Increase in gross receipts; better application of power to trains; increased capacity of terminals; reduction in operating expenses, in terminal cost, and in cost of maintenance of equipment; increased reliability of service."

It needs no argument to prove that a better suburban service can be given with electric than with steam equipment, and all records show that the introduction of electricity is followed by a large increase in gross receipts.

The introduction of electricity on the New York Elevated system was followed by a reduction in the total operating expenses of from 13.2 to 9.5 cents per car-mile (28 per cent.) and an operating ratio of from 58.1 to 41.2 per cent. of the gross earnings. A portion of this saving is in the cost of power supply and conducting transportation, but the largest saving is in the cost of maintenance of equipment. It is believed that even a greater reduction can be made in the cost of operating suburban traffic on steam railroads, as the conditions under which locomotives were operated on elevated roads were more favorable than those at most large terminals.

For the care of locomotives at terminal points, round-houses must be installed and maintained, and as these structures must be of a permanent character, their first cost is high. Additional buildings must be provided for supplying the locomotives with coal and sand; cinder pits must be installed and a gang of men employed for removing ashes and cinders; care must be provided for the removal of ashes from the cinder pits and switch engines employed for handling the cars. With electric cars the terminal costs are reduced by about 60 per cent. and the investment in buildings and equipment reduced by 80 or 90 per cent.

The following gives a general outline of about what is accomplished in this direction: Roundhouse, cinder pit; washing boilers, cleaning flues and grates, packing cellars, firing up engines, turn-table expenses, all eliminated; wiping practically eliminated; sand-house expenses, about equal; water supply, practically eliminated; coal trestles, eliminated. The arrangements made for handling coal and ashes are transferred to the central power-house, but owing to the better facilities installed, the cost of doing the work can be reduced.

The care of electric cars does not require expensive buildings and, as a rule, they are not placed under cover when out of service. Where this practice is followed, the only building required is a small inspection house provided with pits.

Motor cars in constant service make an average of 220 miles a day, and make about 50,000 miles before being taken into the shops for complete overhauling. In the matter of inspection and light running repair, a saving of from \$30,000 to \$40,000 per year is possible wherever traffic is heavy, in favor of electricity. The cost of coal is much less. Heating and lighting by electricity is more cheaply done, and in nearly every case the cost of electrically operated roads falls far beneath that of steam roads.

Mr. J. Hampton Moore, Chief of the Bureau of Manufactures of the United States Department of Commerce and Labor, has resigned that important post to accept the presidency of the City Trust Company, of Philadelphia.

AMERICAN EXPORTS GAINING HEADWAY.

Despite the ever increasing domestic demands for manufactures and agricultural products, the preponderance of the United States export trade over its imports continues to grow, showing conclusively that American goods are making strong headway in all parts of the world.

April exports amounted to \$129,358,229, the highest record ever made in April of any year, exceeding by 9 millions the best record made in April of any preceding year, viz., 120½ millions, the total reached in April, 1901. April imports were also unusually large, being valued at 95½ millions of dollars as against 101½ millions in April, 1897, the banner April in the record of earlier years. Reviewing April commerce in the period from 1875 to 1905, imports have grown much less rapidly than exports. In 1875 the April imports amounted to 43.6 millions; in 1885 that month showed a total of 48.8 millions; in 1895, 68½ millions; and in 1905, 95½ millions. April imports have thus increased but 52 millions or 119 per cent. over the total shown by April, 1875.

Meantime exports have grown from 39.6 millions in April, 1875, to 53 millions in April, 1885, 65½ millions in April, 1895, and 129½ millions in 1905, the last-named month showing an increase of 89.7 millions, or 227 per cent. as compared with April, 1875. The balance of trade has frequently shifted from one side to the other during the past thirty years, usually resting on the export side, especially since 1897. April, 1875, showed an excess of imports over exports amounting to nearly 4 million dollars; by April, 1885, the balance had so shifted as to show an excess of exports of over 4 millions; April, 1895, showed an excess again in favor of imports, amounting to about 3½ millions; and April, 1897, showed an excess of imports of 23½ millions, this abnormal balance on the side of imports being due to the heavy importations in anticipation of the new tariff measure then pending. Since 1897, however, exports have shown an excess over imports during every month of the year, the amount of that excess, however, varying from 97 million dollars, the high record made in December, 1903, to 7½ millions in August, 1903, the lowest point reached since July, 1897, the initial month in the unbroken period of preponderating exports extending from that date down to the present time. The excess of exports over imports during April of the present year was 33 7/10 million dollars, as against 26.4 millions in April of the preceding year.

The falling off in exports noticeable in the earlier months of the present fiscal year has entirely disappeared, so that the ten months already elapsed show a total exportation of 1,275 million dollars, or but 2½ millions less than that of the corresponding ten months of the preceding year. Imports during the last ten months were valued at 935 million dollars, as against 829 millions in the ten months of the preceding year.

Details showing the articles contributing to the high record made by our commerce during April are not yet available, but comparatively accurate information as to their character may be obtained from an analysis of the commerce of March and of the nine-months' period ending with March 31, 1905. During March, the closing month of that period, products of agriculture contributed 54 per cent., manufactures 37½ per cent. and other products 8½ per cent. of the total exports; and of the imports, manufacturers' materials supplied 47.6 per cent., articles of food and animals 26.9 per cent., manufactures ready for consumption 13.8 per cent. and luxuries and articles of voluntary use 11.7 per cent.

of the total. Applying these proportions to the April exports, and adding the figures thus obtained to the actual totals for the nine months, it may be assumed that of the domestic exports during the ten months ending with April, agricultural products amounted to about 710 millions, as against 779 millions last year; manufactures to about 440 millions, against 372 millions last year, and other articles 104 millions, as against 106 millions last year.

On the export side agricultural products thus show a decrease of about 69 millions of dollars and miscellaneous articles 2 millions, a combined decrease of 71 millions. Manufactures, however, show an increase of nearly 68 millions, so that the net decrease in total exports during the ten months is but 2½ million dollars, with indications that by the end of the fiscal year this decrease will have entirely disappeared and been supplanted by a small increase.

American goods are eagerly sought for by foreign customers. There is a steady demand for them by reason of their being made by American skilled labor. Customers unhesitatingly pay more for them. This has aroused the American manufacturer and he has begun to advertise freely abroad, in order to create a larger demand for his goods. He is reforming his whole advertising scheme: his catalogues, booklets and letters are now written in the language of the country in which he is trying to extend his trade. He is sending abroad traveling men who speak the languages of the countries to which they are assigned. These men are studying the needs of the countries and the best means of meeting the conditions imposed.

The American consuls are also investigating trade conditions and making full reports to the Department of Commerce and Labor, which is working hand-in-hand with the manufacturers to increase the foreign trade of the United States. From the present outlook, there will soon be a revision of the United States tariff which will make it possible to negotiate reciprocal trade treaties that will gain lower duties and thus lessen the selling price of American goods abroad.

Take it all in all, the outlook for a larger, better and more profitable export trade during the remainder of 1905 is indeed gratifying. Everything points in that direction. America has the goods; the foreign consumer demands them. The one drawback—the question of credits—once adjusted, there remains no reason why the foreign demand should not be filled.

PLANS TO INCREASE AMERICAN EXPORTS.

A determined plan to increase the American export trade has been outlined, and the Southern Cotton Association of the United States has taken the first step toward its fulfilment in requesting the Federal Government to appoint a commission to investigate ways and means. There is every reason to believe that the Government will do this. Mr. William Whittam, Jr., a cotton manufacturing expert, who has given to the export trade deep study, believes the Government should appoint and maintain a permanent commission composed of experts in the various lines of industry—agriculture, manufacturing and mining—whose duty it should be to overcome the difficulties now existent so as to bring the foreign buyer and the American exporter in closer touch.

The American manufacturer is able to produce all manner of products at prices low enough to compete with any country. He is fast learning the needs of the foreign trade and how to

convince the buyer that American goods are the best. The problems of transportation and banking are yet to be thought out, but the solution will no doubt be ships flying the American flag under Government subsidy, and American banking houses in the principal cities of the world. With prompt and cheap transportation, and economical collections established as facts, American traders will be found dominant in all parts of the world.

Mr. Whittam thinks the Federal Commission should be made up of experts trained in the habit of observation and investigation; its members should be sent to the great market-places of the world to study the needs of the people, the tariffs, the sales organizations that may be utilized, the inland transportation, banking facilities, credit demands and needs, methods of packing, style of goods in demand, railroad, mining and agricultural developments, competition methods, etc. The Bureau of Manufactures of the Department of Commerce and Labor has in a measure recommended this, asking for the appointment of special consular agents who are to be experts in commercial business.

TRIBUTES TO AMERICAN CONSULS.

The American consul is just now the subject of much discussion, both in the United States and abroad. That he has become the peer of the members of the consular forces of other nations, and is fast surpassing many, is conceded by all. Nothing is to be left undone by the State Department to raise the standard of the American consular service; especially is this the aim of Assistant Secretary Loomis, himself an experienced consul and diplomat.

In discussing this subject, the *New York Times* says editorially:

"Only a few years ago criticisms of the American consular service were severe, but now each new day brings ample proof that our consuls are alert to build up American trade, to strengthen American influence, and to uphold the dignity of the flag. Every day abundant evidence is published showing that our consuls are doing good work. How good it is in some instances will never become generally known, for more than one of them has done the work which was close to the character of that which is supposed to be the function of ministers only.

"Of late years our Department of State has done many things that have tended strongly to put this nation on a better footing among the powers; but not the least of its good work is that which it has done toward making our consular service what it should be."

Maurice Low, in the *London Post*, utters some trenchant truths regarding the *personnel* of the service. He says:

"The American consul is *sui generis*. He is made a consul without previous training or experience, frequently without a rudimentary knowledge of the language of the country in which he resides. Perhaps the very fact that they have no previous training, that they come fresh from their own country, and everything they see appeals to them with the force and novelty that a new object appeals to the child with an expanding mind and makes the same impression; or perhaps because unconsciously it is a case of the selection of the fittest, and the man who is shrewd and pushing enough to be able to capture a

consulate has qualities which distinguish him above his fellows—whatever the reason, the fact remains that these untried men are sent abroad and that they are keenly alert to the demands made upon them.

"They are always investigating, inquiring and wanting to know. They are not content merely to send to the Department perfunctory reports of official returns of imports and exports or mere tables of figures (although these as matters of routine are not ignored), but they delve into obscure places, they compare and contrast, they offer their advice and suggestions freely and the Department allows them full scope. How much the consul's report is 'edited' before it is made public, or how often it never is given publicity, no one, of course, outside the Department has any means of knowing. But the daily bulletin issued containing these reports, which is given wide and gratuitous distribution, shows that the American consular corps is industrious and intelligent."

Our foreign readers will be pleased to know that these consular reports are not only furnished to all the newspapers and periodicals of the United States, and thus receive wide circulation, but are mailed to all the large manufacturers, brokers, exporters and dealers, and thus bring the wants and needs of the foreign nations to the direct attention of those whose business it is to supply such demands. The American consul is carrying the banner of American industries to the threshold of the foreign consumer, and his work is being felt throughout the business world. In him the American manufacturer has a good advertiser, for he never ceases to explain the superiority of American manufactured goods over those of any other nation.

PACIFIC EXPORT TRADE FLOURISHING.

Export trade on the Pacific Coast is at high tide. The export records at San Francisco, Portland, Seattle and Tacoma are the largest in history. So much freight is being shipped to China, Japan, Australia and the Philippines that the regular steamers are unable to handle it and tramp steamers are being pressed into service. Cotton, grain, flour, oil, machinery and railway supplies and equipment make up the bulk of the exports, although large consignments of manufactured cloth and cotton goods have gone forward.

While the Oriental trade is the heaviest in years, the trade with Australia and South America has temporarily fallen off to a considerable extent and several ships recently returned to Australia in ballast. As the Japanese tariff will be increased July 1st, goods for that country are being given preference. Great cargoes of flour are being hurried forward. Barley, wheat and oats are also being rushed to Japan. The largest cargo of tobacco ever shipped from the Pacific Coast was consigned to Japan on the steamship "Arabia"—1,155 hogsheads, valued at \$182,728. The "Arabia" carried more than \$500,000 worth of goods, the greatest cargo in the history of Portland. Russia also has been buying freely in the United States, great quantities of hay and feed being forwarded to Siberian and Russian Pacific ports. Considerable machinery and railroad supplies, including steel rails, have been sent to Corea, Manchuria and Japan.

This phenomenal increase of the Pacific export trade is having its effect in attracting more ships to those ports, and it is expected that with the close of the Japanese-Russian war a still further increase will be reported.

AMERICAN INVASION OF FOREIGN MARKETS.*

Hon. Victor H. Metcalf,

Secretary Department of Commerce and Labor of the United States.

The United States has become, within recent years—within the memory of many men here present—the greatest manufacturing nation of the world. In 1860 the United States stood at the bottom of the list of the four great manufacturing nations, namely, United Kingdom, France, Germany and the United States. Now, only forty-five years later, she stands not only at the head of the list, but her manufactures are equal to those of the other three nations combined.

The figures which I shall quote to show the relative growth of manufacturing in the four great industrial nations of the world are necessarily estimated as relates to all other nations except our own, because the United States is the only country which takes a complete census of its manufacturing industries; but the estimates are those of men who have given careful study to this subject and, so far as I am aware, their reasonable and approximate accuracy has never been called in question.

The late Michael C. Mulhall, the celebrated English statistician, estimated that in 1860 the manufactures of the United Kingdom were two thousand eight hundred millions of dollars in value, of France two thousand and ninety-two millions, of Germany one thousand nine hundred and ninety-five millions, while the census of the United States puts our total manufactures for that year at one thousand eight hundred and eighty-six millions.

In 1904 Mr. William J. Clark, in *The Engineering Magazine*, estimated the manufactures of the United Kingdom at five billions, of Germany four and two-thirds billions, of France three and a half billions, while the census of 1900 gave the manufactures of the United States at thirteen billions, making our total of 1900 practically equal to the estimated aggregate of the United Kingdom, Germany and France at the date covered by his estimate of 1904.

The same authority also testified the value of foreign manufactures in Austria-Hungary at two billions of dollars, Russia at little less than two billions, Italy one and three-quarters billions, Canada eight hundred millions and Belgium seven hundred and fifty millions. It is quite apparent, therefore, that the world's chief producers of manufactures are the United States, the United Kingdom, Germany and France, and that the manufactures of the United States alone are nearly, if not quite, equal to those of her three principal competitors—the United Kingdom, Germany, France.

Yet a further study of the world's figures with reference to manufactures, and especially those entering into international commerce, shows that the United States, the greatest manufacturing nation, supplies at present but a small proportion of the manufactures entering the markets of the world. The total value of manufactures entering the world's international markets, determining this grand total by the aggregation of the manufactures exported country by country the world over, is, in round terms, four billions of dollars.

Of this grand total of four billions of dollars entering international commerce, the United States supplies but five hundred millions or 12½ per cent., although she is by far the largest manufacturing country of the world.

Why is this true? Why is it that the United States, the world's greatest manufacturer, supplies so small a share of the manufactures consumed by the various nations of the world?

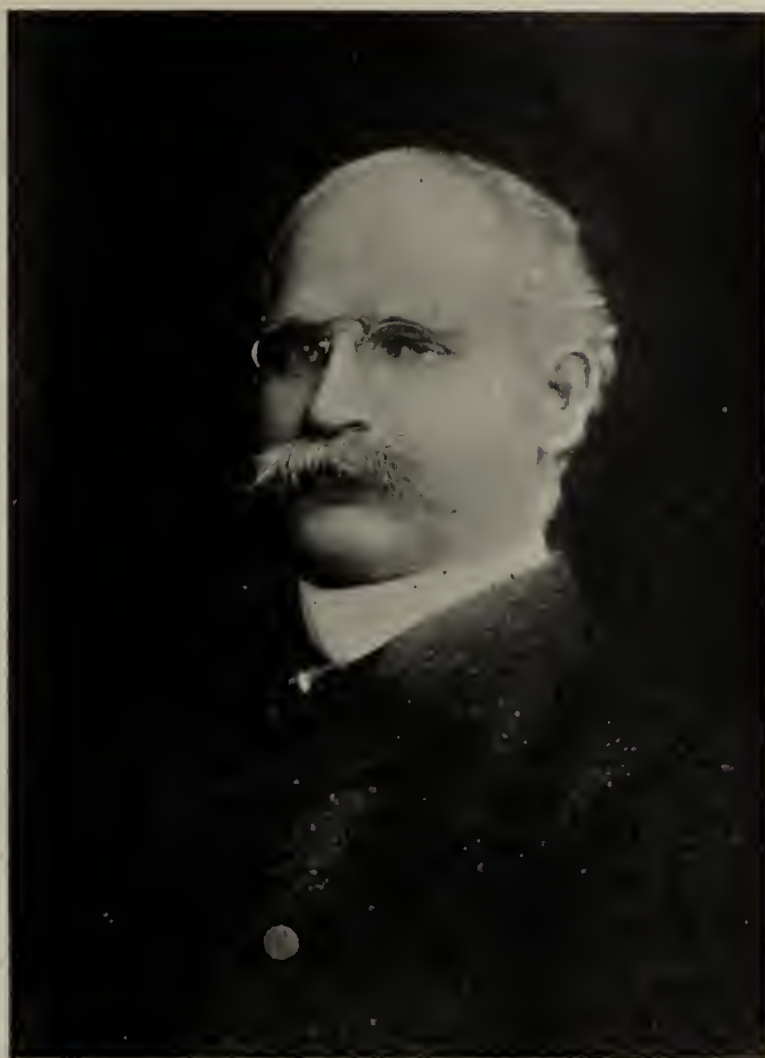
We are the world's greatest producer of the principal articles required for manufacturing. We have the world's greatest supply of coal for turning these materials into manufactured form, the best machinery, the greatest supply of capital for production in large quantities, thereby reducing the proportionate cost of production, the cheapest transportation for assembling the natural products and carrying the manufactured products to the seaboard, the most ingenious and industrious workmen, and our manufacturers are a body of extremely intelligent, energetic and successful business men.

Why, then, do we, with all these advantages, supply such a small proportion of the world's requirements in manufactures? This is a question which we not only have the right to ask, but it is one which we should carefully consider and try to reach intelligent conclusions.

Prior to 1896 we held second rank in the exportation of domestic products, but in that year the exports of the United States exceeded those of any other nation and that has been the case in a large proportion of the years since that time. We need to have no anxiety in regard to our standing as a general exporter of domestic merchandise.

The world wants the products of our fields and mines, and is buying them freely. We are the world's greatest producers of natural products, such as breadstuffs, meats, cotton, coal, timber, iron, copper, mineral oil for illuminating purposes, and many other articles, and the world takes all that we can produce of these products in excess of the wants of our own people. It is to manufactures, therefore, that we must turn our attention in the development of our export trade and in studying the opportunities for enlarging our sales throughout the world.

Considering only the net value of our manufactures and



HON. VICTOR H. METCALF,
Secretary Department of Commerce and Labor.

*From an address before the National Association of Manufacturers of the United States, Atlanta, Ga., May 18, 1905.

eliminating from consideration those not classified with manufactures in the statement of our export trade, it may be stated that but about 8 per cent. of our manufactured products, as classified in our export statements, find their way to foreign markets, while the remaining 92 per cent. are consumed by our own population. While our manufacturers naturally look first to the great home market—a market which, of itself, exceeds that offered by all the nations of the world—the fact that our production of manufactures is increasing far more rapidly than our population, suggests that it is of especial importance to us to carefully consider the great markets open in other parts of the world and the causes which have prevented a greater participation by us in the work of supplying those markets.

The sale of our manufactures has grown from one billion dollars in 1850 to thirteen billions in 1890, and fifteen billions in 1905, and is thus fifteen times as much to-day as in 1850, while our population has scarcely quadrupled since 1850. It is then apparent that our manufacturing industry is rapidly gaining upon population, and that your duty to the country and your duty to yourselves is to determine the methods by which the distribution of the surplus products to other parts of the world may be increased.

This great foreign market for manufactures, a market amounting to four billions of dollars or eight times as large as our total exports of manufactures in the calendar year 1904, the year of our best record in exports of manufactures, is distributed over the entire world. Every country is in a greater or less degree an importer of manufactures. Even the European countries, which are themselves great manufacturers, import largely articles classified as manufactures, but they are in most cases but partially manufactured and intended for use in producing the finished manufactures which these countries in turn distribute to those continents and nations which have no well developed manufacturing industries. It is in Asia, Africa, South and Central America, and Mexico, Australia and Oceania, that the great market for finished manufactures exists, and it is therefore to these sections of the world which take finished manufactures and which now take them chiefly from countries other than the United States, that our manufacturers must look for the enlargement of their markets for finished manufactures.

The value of manufactures imported into Asia and Oceania aggregates approximately seven hundred million dollars per annum, and of this we supplied in 1904, only sixty-five millions, or less than 10 per cent. The total imports of South America amount to three hundred and eighty-two million dollars, and of this we may assume that more than one-half, or approximately two hundred millions, is manufactures, and of that total we supplied in 1904 but thirty-five million dollars. The total imports of Africa amount to four hundred and fifty million dollars annually, of which presumably considerably more than half or perhaps two hundred and fifty million dollars' worth are manufactures, and of this we supplied in 1904 but thirteen million dollars' worth.

Thus the value of the manufactures imported into Asia and Oceania, Africa and South America, is approximately eleven or twelve hundred millions annually, and of this we supplied but a little more than one hundred million dollars' worth, or, certainly, at a liberal estimate, not more than 10 per cent. of their total importations of manufactures.

No other countries of the world except Europe and the United States can be classed as manufacturing nations in the

sense of producing in excess of the wants of their own population. If we, in the United States, are supplying but 10 per cent. of this enormous importation of manufactures, it is quite apparent that the nations of Europe are supplying most of the other 90 per cent.; yet those nations come to us every day in the year and buy our raw material or material in a slightly manufactured state for use in producing the very articles which we manufacture and which they sell in enormous quantities to those countries in which we are ourselves seeking a market.

In South America we naturally feel that we should have a large part in supplying the articles imported. Not only are the people of South America our neighbors, and our market somewhat nearer to their doors than that of the other great manufacturing nations, but we are their principal customers for the articles which they have to sell, and we should therefore be the principal market in which they buy the articles which they must purchase.

The fact that a large proportion of the exports from those countries are sent direct to our ports, suggests that the vessels bringing this merchandise should carry back with them our own products and thus supply a much larger share of the imports of those countries than at present.

Our total imports from South America amounted in 1904 to one hundred and twenty million dollars, and our exports to these countries but fifty-one million dollars.

Not only is this true, but our imports from South America have increased more than fifty-four million dollars since 1886, while our exports to South America have increased but twenty-four and one-half millions in the same time.

In the year 1904, which showed larger exports from the United States to South America than in any preceding year, the total was but fifty and three-quarter million dollars, while the latest available data regarding the total imports of South America as a whole, puts the grand total of its imports at three hundred and seventy-five million dollars, indicating that in the best year of our export trade with that section of the world we supplied but about 13 per cent of its imports.

From what parts of the world does South America draw the remainder of this vast total of its imports? Chiefly from Europe. The figures of trade of South American countries in the latest available year show that they imported from the United Kingdom one hundred and twenty million dollars' worth of merchandise, chiefly manufactures; from Germany, fifty-four million dollars; from France, thirty-five millions; from Italy, twenty-four millions, and from Spain, eight millions; while, as already indicated, our own records for the past year of our exports to that part of the world totaled but fifty-one million dollars.

Thus, it is apparent that our European rivals are supplying the great bulk of the articles imported into the ports of our neighbors to the south, although we are not only large purchasers of their products, but increasing rapidly our purchases from them.

From Brazil, our imports in 1904 amounted to over seventy-six million dollars, while our exports to that country were but eleven millions. From Chile our imports in 1904 were over ten and three-quarter millions, and our exports to that country less than five millions. From Colombia our imports were about eight millions and our exports to that country four and three-quarter millions. From Venezuela our

imports were nearly seven millions; our exports but a trifle over three millions. Only in Argentina and Paraguay do our exports find sufficient market to make their total equal or exceed our imports from those countries.

Let us take a closer view of the more important articles imported into South America and compare the value supplied by other countries with that supplied by the United States. In cotton manufactures, of which Europe draws its chief supply of raw material from us, the United Kingdom sold to South America in 1903, thirty-eight million dollars' worth, Germany nine millions, Italy seven millions, France three and one-third millions, United States three and two-thirds millions, Switzerland one million. Thus, of the sixty-three million dollars' worth of cotton manufactures sold to South America by the seven principal exporters of cotton manufactures, the United States supplied but \$3,691,000 worth, or less than 6 per cent. of the total—yet we are the world's chief producers of cotton, and our ports contiguous to the cotton fields are nearer to South America than those of the great manufacturing countries of Europe.

Take iron and steel as another example. The exports of iron and steel manufactures to South America in 1903 were, from the United Kingdom, eighteen and three-quarters million dollars; from Germany, thirteen million dollars; and from the United States, the world's greatest producer of iron and steel, only nine and one-quarter millions.

Of leather, France sent to South America in 1903 over two million dollars in value; Germany, one and one-half millions, and the United Kingdom, \$873,000 worth.

Now, let us turn for a moment to the other parts of the world, which are customers of the class of manufactures produced in the United States, for which we are seeking markets.

To China, in 1903, our exports of cotton manufactures amounted to but \$4,139,000; those of the United Kingdom, which purchases her cotton chiefly from us, amounted to \$22,829,000. True, 1903 was a bad year for cotton exports to China, but presumably the same causes which operated against our exports of cotton manufactures to that country would operate against the United Kingdom, yet it still sold to China in that year cotton manufactures valued at five and one-half times as much as those sold to her by the manufacturers of the United States.

In British Australasia, the imports of merchandise of all kinds from the United Kingdom in 1903 were one hundred and thirty-three million dollars, and from the United States, thirty-eight millions, and in South Africa, in 1903, the imports from the United Kingdom were one hundred and forty-eight million dollars, against thirty millions from the United States.

Yet there is a brighter side to the picture. Our exports to most of those countries are now gaining rapidly, and in many cases are gaining much more rapidly than those of our European rivals.

Into Australia, for example, the imports from the United Kingdom grew from one hundred and six million dollars in 1893, to one hundred and thirty-three millions in 1903, an increase of a little more than 25 per cent., while those from the United States grew from seven and one-half million dollars to thirty-eight millions, an increase of about 400 per cent. Into South Africa the imports of the United Kingdom grew from fifty-four millions in 1893 to one hundred and forty-eight

millions in 1903, an increase of 175 per cent., while those from the United States into South Africa grew from a little less than three million dollars in 1893 to over thirty million in 1903, an increase of over 900 per cent.

Into China the imports from the United Kingdom increased from thirty million dollars in 1890 to thirty-six millions in 1902, and from the United States they increased from four and one-half millions in 1890, to practically nineteen millions in 1900.

Japan's imports from the United Kingdom grew from twenty-three million dollars' value in 1890 to twenty-five millions in 1902, an increase of but two million dollars; from Germany they increased from six millions in 1890 to a little less than thirteen millions in 1902, an increase of a little less than seven millions; while from the United States they increased from six million dollars in 1890 to twenty-four and one-quarter millions in 1902, an increase of over eighteen million dollars, or about two and one-half times as much as the increase from the United Kingdom and Germany combined.

Into Argentina, imports from the United Kingdom fell from fifty-five millions in 1890 to thirty-five and three-fourths millions in 1902, a reduction of practically twenty million dollars. The imports from Germany grew from eleven and three-fourths millions in 1890 to twelve and three-fourths millions in 1902, an increase of about one million; while from the United States the imports grew from a little less than nine millions in 1890, to nearly thirteen millions in 1902, an increase of nearly 50 per cent. in our case, while in the case of Germany the increase was less than 10 per cent., and in the case of the United Kingdom the decrease was nearly 40 per cent.

Now, what are the causes of the slow progress which we are making in capturing or attempting to capture the markets of the world for manufactures? This can, it seems to me, be readily answered. First, our manufacturers have up to this time made little serious effort to extend their markets abroad. True, our exports of manufactures have grown very rapidly in recent years, so much so as to attract wide attention, the total value of manufactures exported having increased from one hundred and eighty-four million dollars in 1894 to four hundred and fifty-two millions in the fiscal year 1904, and over five hundred millions in the calendar year 1904. Yet, this increase has been with comparatively little effort on the part of our manufacturers, and occurs largely in the classes of goods which readily sell themselves; such, for instance, as copper, mineral oils, or manufactures of iron and steel, of which we are the world's largest producer. True, there has been a healthy growth in many other articles, a growth due doubtless in some degree to the efforts of our manufacturers, but I think I may be pardoned if I say that these efforts have not been, up to this time, at all in proportion to those put forth by our competitors in other countries.

And this brings me to the second reason for the slow growth in our exports of manufactures and the small total which we are supplying in the markets of Asia and Oceania, South America and Africa, in comparison with our rivals of Europe. This second cause of slow growth is found in the fact that our European competitors produce and pack their manufactures in form and conditions suited to the markets which they are intended to supply. This is notably the case with Germany, whose exports of manufactures, especially to

South America, are gaining very rapidly, and, indeed, making more rapid gains than those of any other country.

The reports of our own consuls and others who have made careful studies of the condition in South America, Asia and Oceania, and other parts of the world in which we are attempting to find markets, indicate that the manufacturers who are making the most rapid headway in supplying the markets of those countries accomplish this result by manufacturing their goods to suit the markets in which they are to be sold, and packing them in form convenient for handling in those markets.

As is well known, a large proportion of the manufactures entering the markets of South America, Asia, Oceania, and Africa, must be carried to the interior upon the backs of animals or men, and they must therefore be packed in form suitable for such transportation. In addition to this, the tastes and the customs have been so long followed that the buyers decline to purchase articles manufactured in other form though equally good and perhaps better.

It is the recognition of this condition which is enabling other countries to hold the markets of Asia, Oceania, South America and Africa for many classes of manufactured goods.

While it is true that the manufacturers of the United States have at home a large market, and that they have not, up to this time, deemed it advantageous to change the form of manufacture for their surplus in order to aid its entrance into foreign countries, the further fact that our growth in manufactures is far exceeding the growth of population, suggests that the time is at hand when our producers of this class of merchandise can afford to manufacture a certain proportion of their goods in form required by the markets which they desire to invade, and into which they can only make a satisfactory entrance by offering their goods in the form to which the consumers in that market are accustomed.

Still another difficulty which our manufacturers and others engaged in commerce with Asia, Oceania, South America, and Africa are constantly compelled to encounter is the lack of financial institutions and machinery through which their business transactions can be conducted. In all of those sections in which European countries are holding for themselves the bulk of the market for manufactures, banks and banking facilities, not only for exchange but for the establishment of reasonable systems of credit are entirely in the hands of Europeans, and there is a lamentable absence of organizations of this kind having a direct and satisfactory relation with financial institutions of the United States.

The commerce of these countries, especially in South America, requires long credit during financial relationship with the country from which the merchandise is imported, and without systems of this character the manufacturers of the United States will continue to encounter great difficulty in attempting to establish satisfactory trade relations with the people of the countries in question.

Still another difficulty which our manufacturers must expect to overcome if they desire success in other parts of the world is the necessity of offering their merchandise through persons familiar with the language of the country in which it is offered, and the presentation of their printed and written communications in the language of those countries.

One other difficulty in our attempt to establish trade in the

Orient, or in South America and Africa, and one which must be overcome, at least in some degree, is the lack of direct and satisfactory shipping facilities. While it is a fact that the world is well supplied with ships, and that our general export trade has grown rapidly in the face of the absence of an American merchant marine, it is also a fact that persons desiring to establish trade in manufactures, especially in Asia, Africa and South America, have found that their efforts were seriously handicapped by the lack of regular and reliable facilities for shipping their goods to the countries from which their orders came.

Our export trade for 1904 amounted to \$1,460,827,271, and yet, strange to say, less than 8 per cent. of this trade was carried in American bottoms. With American lines of steamers running at stated intervals from American ports, there is no reason why we should not capture the trade of Central and South America. We have unlimited capital, mechanical ingenuity and inventive genius second to none, the most improved machinery, skilled mechanics and wide-awake, go-ahead, enterprising business men, and, above all, we have the raw material. The advantages are all on our side, and if we only go to work in the right way and in the right spirit we can win the race for commercial supremacy and drive our rivals from the field.

It is true that we have a great foreign trade, but that trade is not entirely the result of intelligent and well directed effort on our part. Foreign nations buy the produce of our soil because they need those products, and the same is practically true of most of our manufactures.

We produce, as I have already said, more than three-quarters of the world's supply of raw cotton, and yet our exports of cotton manufactures amounted last year to the paltry sum of \$22,000,000, a decrease from 1903 of over \$10,000,000.

The value of cotton manufactures imported by South America in 1903 was in round numbers \$63,000,000, and of this amount the United States only controlled about \$3,700,000 worth. Great Britain in 1903 exported to Argentina cotton manufactures of the value of \$11,611,400, while the United States during the same period exported to Argentina cotton manufactures of the value of only \$285,456.

There is no reasonable excuse for this condition of affairs. England does not produce a single pound of raw cotton. We, on the other hand, are the world's greatest producer of raw cotton, and yet England is to-day the world's greatest manufacturer of cotton goods. She buys practically 3,000,000 bales of cotton annually from the United States and ships this cotton to her mills where it is converted by English labor into cotton yarns and cloth and then, after supplying her home markets, she exports manufactured cotton of the value of \$360,000,000.

In other words, out of raw cotton bought mostly in the United States, England, after supplying her home market and her own people, sells to the markets of the world cotton manufactures to a value greater than that of the entire product of all the American mills put together.

There is no reason why Cuba, lying at our very threshold, should not purchase her cotton goods and other supplies from us. There is no reason why the Philippine Islands, an American possession, should not purchase from us. There is no reason why South and Central America should not purchase practically all their supplies from us. And, above all, there is no reason why the United States, the world's great producer of raw cotton, should import annually \$50,000,000 worth of cotton goods manufactured

mostly from American cotton and then pay a duty on those goods when they enter the United States.

These markets of right belong to us and in time we are bound to have them, but we must go after them, we must seek them, we must cater to them, and we must meet their special requirements, the same as we meet those of the home market. And when this is done we can multiply our mills and spindles by four or eight and keep them all busy.

England to-day cannot fill her orders, and I am credibly informed that some thirty or thirty-five new mills are now in process of construction in Lancashire.

We control the trade of South America when it comes to the sale of agricultural implements, breadstuffs and manufactures of wool, but Great Britain and Germany distance us when it comes to the sale of manufactured iron and steel.

I might go on citing instances and making comparisons, but I think I have said enough to demonstrate to you as manufacturers and business men the necessity of organization and concerted action if we expect to increase our foreign trade.

The Pacific Ocean covers about one-third of the earth's surface. Half the population of the world is on the Pacific Ocean, and when the Panama Canal is completed it will bring us into closer touch with the peoples of the Pacific and afford us ready markets for our manufactures and the products of our soil; it will give us the trade of South and Central America and a goodly portion of the trade of the Orient; but we want that trade now. We need it and there is no reason why we should not have it. It will not, however, come to us unsought and unsolicited—that is not the law of trade, as you well know, not even of domestic trade in these days.

Markets belong to those who get them. The battle of trade to-day is to the strong, the swift, the alert and the intelligent. Trade plums do not drop into the mouths of those lying under the trees, but to those who shake the trees.

Until very recent years our domestic market has suffered for the absorption of our domestic production—that condition, however, no longer obtains. We can produce more than we can consume and new markets must be sought and developed, and those markets are to be found in Mexico, Central and South America and the West Indies.

The trade balance of that area is heavily against us; we buy from it more than we sell to it; our exports to it last year were \$162,000,000; our imports from it were \$287,000,000. Now, this balance, at least, should be paid in merchandise and the opportunity lies open for sales which would far more than equalize the account.

There remains the question of how this may be done; how this trade may be secured. The most important factor in that problem lies undoubtedly in broad and accurate knowledge of local trade conditions; in knowledge of the special requirements of each country; in knowledge of transportation facilities, banking facilities, the system of credits, and the nature and character of the goods required in each and every different country.

To assist the merchants and manufacturers of the country in obtaining the information needed in these various trade branches the Department of Commerce and Labor was organized. Congress at its last session appropriated the sum of \$30,000 to enable the Department to send special agents abroad to study and report upon trade conditions. These agents are now being selected and will be sent abroad as soon as the appropriation is available, but

the Department will be powerless unless it has the active co-operation of the manufacturers and exporters of the country.

Your organization, gentlemen, is a powerful one, and will be a tremendous factor in the development of our foreign trade, if you only take hold of matters in the right spirit.

Do not rest content with your present membership, but bring into your organization every manufacturer, large and small, in the United States, and then go for the foreign trade.

If it is necessary to have a merchant marine in order to secure the foreign trade, then fight for an American merchant marine.

If it necessary to have branch American banks established in foreign countries in order to secure the foreign trade, then fight for the establishment of those banks.

If it is necessary to have full and complete information as to the wants of the people, the kind of goods they need and use, and the manner in which the goods ought to be packed, then send agents abroad and get that information.

Find out what your business rivals are doing, what inducements they are offering to secure the foreign trade; then see them, and, if necessary, go them one better.

Your foreign competitors are sending their agents to every part of the globe, one agent at times representing as many as fifteen or twenty different lines of manufactures. They are establishing branch houses and are gaining a pretty strong foothold in the territory that by all the laws of trade belongs to us.

You can displace them, however, and secure these markets for yourselves, if you do not delay too long.

The time, gentlemen, is ripe for American invasion of foreign markets, especially the markets of the Pacific, and it will be your own fault if you do not at once start an aggressive and determined campaign for the purpose of securing those markets.

The value of our manufactures for the year 1905 will reach the magnificent sum of fifteen billions of dollars, an increase over the census of 1900 of two billion dollars, and there is every reason to believe that the ratio of increase will continue during the next five years.

You, as business men, know what this means, and especially what it means to you as manufacturers. I take a deep interest in everything that pertains to the industrial growth and development of the country. I appreciate the magnificent work that has been done by you men in developing and building up the manufacturing interests of the country, and I have watched with keen interest the enormous increase in our export trade and the wonderful progress made by us as a manufacturing nation since 1897. But there is still room for improvement, still room for further development—and I confidently look forward to the time when we will manufacture at home every pound of raw cotton raised in the Southern States, as also many of the articles we now import. The Department of Commerce and Labor, gentlemen, stands for the development of our foreign and domestic trade; it stands for the great manufacturing and commercial interests of this country; it stands for the labor interests, and the shipping interest, and its duty is to foster, promote and develop those interests, as also the transportation facilities of the United States. The department is as yet a weakling, but it will soon become a giant and a most powerful factor in the upbuilding and promotion of American commerce and the elevation of American labor.

AMERICAN SHIPBUILDERS SECURE LARGE CONTRACTS.

The success of American shipbuilders in capturing the work of rebuilding the Russian navy is but another proof of the giant strides that industry is making, due to superior workmanship and character of the materials employed. It also indicates the aggressive policy American manufacturers have adopted. Eight battleships and twenty cruisers are to be built in the United States for Russia, at a cost of \$65,000,000.

Heretofore, but little effort was made to compete with English shipbuilders. The home market kept the big plants in the United States reasonably busy, but they have expanded to such an extent that it is feasible to go abroad for business. The falling off in United States orders had a serious effect on the iron and steel trade last year, in which category comes shipbuilding. In the future, American shipbuilding plants and steel plants will manufacture for the world, so that when a period of depression comes at home the foreign market will make up the deficiency.

Charles M. Schwab, who negotiated the deal with the Russian Government, promises to produce battleships of a type that will startle the world.

The Russian Admiralty has accepted Mr. Schwab's propositions strictly on their merits, he having convinced the authorities that he can produce for Russia warships vastly superior to anything now afloat or at present projected by any other government. They will be monster 16,000-ton vessels of enormous horse-power, and of a peculiar type, combining the projectile-resisting power of battleships with the speed and wide radius of action of cruisers. They will be delivered fully equipped as to armor and ordnance.

The remarkable advance in naval architecture and construction which these American-built ships will mark is a well-guarded secret, but it is believed that it will involve the use of nickel steel of great tensile strength, which in machinery, boilers, frames, etc., will give greater power with decreased weight. Mr. Schwab guarantees to create vessels of 20 per cent. higher efficiency than any now existing.

It is understood that not all the ships constructed in America will be built by the Bethlehem Steel Company, as the time for delivery is a factor, Russia desiring that the ships be turned over as early as possible. While the Bethlehem Company will supply the armor and ordnance, other American yards will profit in the construction of the hulls.

This is also in accordance with the policy of the Admiralty, the Russian authorities having no desire to arouse hostility among rival commercial interests in America, the aim being not only to take advantage of American genius in building up the Russian navy, but distinctly to cultivate closer commercial relations between the two countries.

This great contract means a greatly increased consumption of iron, steel and nickel, which in turn will be reflected in the whole metal trade.

American locomotive builders, too, are abroad looking for orders, and it is expected they will return with large contracts for the furnishing of railroads in the Far East, especially in China (where an extensive system is projected), in the Philippines, Japan and Manchuria.

NEW AMERICAN BRONZE FOUNDRY.

A bronze foundry, which, it is declared, will be the largest in the world, is to be built at Mount Vernon, N. Y., by United States Senator W. A. Clark, of Montana. The building of this foundry came about in a most peculiar manner.

When the plans for Senator Clark's New York mansion were completed, the architect informed him that the bronzes could not be furnished promptly; that he would have to wait his turn and perhaps suffer a delay of two or three years. The Senator was equal to the emergency. "Buy up a bronze foundry and get the master-bronze founders of the world to run it," was his command. As a result, he bought the Henry-Bonnard plant, in New York, enlarged it and employed the best workers available. He had all his bronzes cast on time, and now, becoming interested in the industry, he has decided to build a plant, which he expects to be the greatest in the world.

Casting in bronze was such an unknown art in this country at the time the Henry-Bonnard concern was established in 1872 that practically all of the skilled artisans were brought from the art foundries of France, Italy and Germany. Some of them still remain with the company. Fifty of the employees have worked there twelve or fifteen years. One foreman started in as an apprentice over twenty-five years ago. Instead of importing experienced men from European art centers, native Americans are now trained in the business—starting as apprentices and gradually being pushed forward until they are foremen, and are placed in charge of the various departments which go to make up one of the most peculiar of New York's peculiar industries.

Now more than two hundred men, exclusive of the office force, are employed constantly in the big shop. While eleven nationalities are represented there, it is only because the nations of Europe have more good workers in bronze than has the United States.

"People who think they must go abroad for the best-designed and best cast bronze had best look around them right here in New York," said Eugene F. Aucaigne, managing director of Senator Clark's foundry. "We can not only do as good bronze work here as can be done abroad, but we can do better. To prove this I need only mention some of the celebrated statues which have been modeled in France and cast here in our foundry.

"The great equestrian statue of Washington, modeled by Daniel C. French and Edward C. Potter, and presented to the city of Paris by the women of America, was made here. We are preparing to cast an equestrian statue of General McClellan, the models of which have just arrived from Paris.

"The largest bronze doors which have ever been cast in this country are to be made here for the front entrance of the State capitol at Harrisburg, Pa. Each door is to be cast in one piece—a feat which I believe is unprecedented, when you consider the size—16 feet 3 inches by 11 feet 6 inches."

The Upholstery and Drapery Guide—(Review Pub. Co., N. Y., \$3.—An admirable effort to supply a widespread demand for a concise handbook for the trade. While the greater part of the material had previously appeared in *The Upholstery Trade Review*, its republication in this handsome quarto volume will be appreciated. After an interesting historical introduction, the subject of Period Decoration is discussed from the practical business standpoint. Every form of drapery, from that of the French palaces down to the decoration of a modern "den," is pictured and described. The greater part of the book is devoted to excellent illustrations of the most suggestive kind. For practical upholstery work, it is a guide in every sense of the word.

SETTING TYPE BY TELEGRAPH.

Interest in a machine for setting type by telegraph has again been aroused by the announcement that the Murray apparatus has been successfully applied to the linotype machine. Donald Murray is the inventor of the printing telegraph system now in use by the British, German and Russian governments. This same apparatus, with some minor additions, now works successfully in connection with the linotype or monotype typesetting machines.

Mr. Murray, in describing his achievement, is quite frank. He says it saves little in the cost of operation. To set a column of type costs about eighty-five cents. The automatic mechanic employed with the printing telegraph would double the speed, thus making it possible to set a column for forty-three cents, but other costs would negate this.

This would hardly be sufficient to induce newspapers to start automatic typesetting by telegraph, but the possible saving of time is a more important feature. The saving of a few minutes is vital to newspapers at certain hours, and this may ultimately lead to automatic typesetting by telegraph, but there are many obstacles in the way. One is the necessity for press messages being revised, punctuated, corrected, and often cut down before being set up in type. The Murray is the only automatic apparatus making provision for this difficulty by allowing the editorial corrections to be carried out by the compositor while the type is being automatically set.

All that can be said about automatic typesetting by telegraph is that it is a possibility of the future, and that if it is done at all it will have to be done on the lines of the Murray apparatus, because the Murray system alone is practical, both from the newspaper and from the telegraphic point of view.

When a message arrives at the receiving station it is represented by a number of holes punched in the tape which operate special keys on the typewriter, pulling the typewriter carriage back when necessary, and working it as if by human hands. In the same way a linotype machine is worked. A press message is sent off in the usual way, and by means of the Murray apparatus it is immediately set up in type at the other end.

"Any person," says Mr. Murray, "who has had occasion to examine the records of patents connected with telegraphy must have been astonished at the number of printing telegraphs invented during the past sixty years. In the United States alone over four hundred printing telegraph patents have been issued since the invention of the electric telegraph. In hardly any other field of human endeavor has so much labor resulted in so little return.

"There are many reasons for this want of success, but they are all based on the extreme complexity of the conditions to be fulfilled and the absence of any technical literature explaining what these conditions are. With one or two exceptions, telegraph engineers, realizing the difficulties of the subject, have left it alone, and printing telegraph inventors have in most cases been outsiders. The complexities culminate in the printing telegraph, because in that case the problem is to set type at a distance."

The type may be fixed on the circumference of a wheel or may exist as separate type on the ends of type bars, as in most typewriters, or as loose type in a typesetting machine; but in all cases the problem is to set type—that is to say, to bring a particular type to a particular printing point in the shortest possible time, and in the case of the printing telegraph to do that at a distance over a single telegraph wire.

It may be pointed out in passing that all telegraph systems, from the Morse key upward, are printing telegraphs more or less developed, and that a completely developed telegraph system must be a printing telegraph. Telegraphy is one of the few branches of human activity in which the tendency to substitute machinery for human skill has not yet made much progress, but the advantages to be gained are considerable, and there is every indication that the era of fully developed machine telegraphy has now arrived.

LIGHT-WEIGHT SARDINE CANS.

The weight of canned sardines is just now a subject of discussion in the United States, and foreign buyers will no doubt soon be confronted with the same question. The old soldered can in which sardines have been packed heretofore has been discarded in favor of a new stamped drawn tin-can, which is much lighter in weight. Because each package is lighter, many dealers and consumers have complained that the canners have reduced the amount of fish put in each can, which is not the case. Exactly the same bulk of fish is placed in the can. The tin plate weighs less and the absence of solder contributes to the lightness of packages.

From 2½ to 3 pounds of solder per case are used. The can manufactured on sanitary principles and known as the "drawn" can is stamped out of a block of tin and closed by machinery and without the use of solder. This makes it lighter. Some cans are made from light-weight plates, say 80 pounds, while others use 100-pound plates, the weights varying between the two figures. Packers using the new "drawn" can are able to pack sardines at less cost, because they save the item of expense of solder. The cost of packing is thereby reduced, and the product per case being lighter by 2½ to 3 pounds, the expenses of transportation to the several markets are less than in the old-style can.

A representative of several large sardine packers said: "The question of weights on sardine cans is a matter that we have looked into and we do not consider that the weighing of cans is a proper test. The right way to make a comparison between the two styles of cans is that of cubic measurement. We have advised our customers to take this means of convincing themselves that the new drawn can will hold fully as much as the old-style can. Measurements we made ourselves showed that the drawn can when filled with water, in some instances held more than the old-style can. We do not fear a comparison, and will stand by the drawn can every time."

American Piano-Playing Machines Abroad.—American piano-playing attachments are being exported in large numbers. The domestic demand heretofore has been so large that most of these instruments were sold at home, but the great demand has caused the factories to expand their output materially until now they are able to supply both the domestic and foreign trade. With the increased productive capacity came a broadening of the markets and now the manufacturers are going after the foreign trade with the energy and dash characteristic of American firms. As a result, the exports of musical instruments is again on the increase, and it is expected that 1905 will surpass in volume the foreign sales of any preceding year.

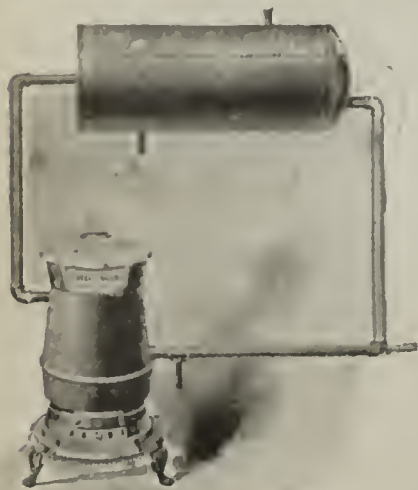
American pianos, too, are in greater demand abroad and the export statistics for the last nine months show an increase, as also do organ sales. The total value of exports of musical instruments for the nine months of the fiscal year amount to \$2,444,578. There were exported in that time 9,893 organs valued at \$719,229; 1,681 pianos worth \$386,128 and 3,519 piano-players valued at \$642,019. The total imports of musical instruments during the same period was \$979,577, a decrease of \$86,644.

Oriental Rugs and Carpets.—(Review Pub. Co., N. Y., \$1)—is an attractive little book filled with valuable information for buyers or sellers of Oriental floor coverings. Its authors, who have had exceptional opportunities for obtaining reliable data, have evidently sought to prepare a brief but practical guide. The numerous types of rugs from Eastern looms are all described and illustrated, with a special chapter of advice to the purchaser. Typographically, as otherwise, the volume is a credit to those responsible for its publication.

Cotton-Duck Manufacturers Consolidate.—All the cotton-duck manufacturers of the United States have merged their interests into a giant concern, called the Consolidated Cotton Duck Company, with \$13,000,000 capital.

Improvements in Heating and Sanitation.

The question of properly heating and giving perfect sanitation to a building is one of such vital importance that the ablest engineers have for many years given it careful study. The result



LITTLE GIANT TANK HEATER.

has been that during the past ten years the manufacture, construction and installation of various heating and sanitary systems have undergone a great change, which has in turn added largely to the comfort and health of our people. Low-pressure steam and water heating boilers are to-day but slightly changed from those in use some years ago, but the change represents more efficient and more economical apparatus, whereby the humblest cottage or the largest business block can to-day be heated safely and economically by means of these improved house-heating boilers.

In the question of cast-iron radiators used in conjunction with heating boilers, the improvements have been very marked, and to-day many firms are producing a line of both steam and water radiators, which are very dainty in design and most efficient. They are made in many styles to harmonize with the various forms of decoration in the rooms in which they are to be placed, and are also of various constructions; in some cases, fresh air may be taken from the exterior of the building and thoroughly heated by passing over certain parts of the radiator, whereby fresh and wholesome air is introduced.

The hot-water and steam-heating systems are similar in many respects, and the results obtained from both are practically the same. These two systems fulfil, in a great measure, all the requirements for modern successful heating. For warming the average building the hot-water system is the best in many cases, but among the many features in favor of steam is the comparatively small heating or radiating surface. This system requires from 30 to 50 per cent. less piping than hot water. In gravity hot-water heating, a pipe leads from the boiler to the source of water supply. A valve regulates the supply of water to the boiler. The regular pressure circulates the water through the pipes and radiates all over the house, filling the entire apparatus.

In all open-tank hot-water systems a small reservoir, commonly called an "expansion tank," is placed at the highest point of the system, above the highest radiator. This tank is open to the air, and provides for the expansion and contraction of water in the system. The fire is started, and the water in the boiler commences to heat. As it heats and becomes lighter, the heavier, colder water in the return pipes forces the warmer upward into the various radiators. In passing through the radiators the heat from the water is imparted to the iron, from which it radiates through the room. As the warm air passes through the radiators it loses part of its heat. It becomes colder and heavier and descends to the boiler through the return pipes. There it is again heated and starts on its journey through the various radiators. This is an endless circulation, whereby the water goes up through the supply pipes to the radiators in the various rooms, and, returning to the boiler, is used over and over again.

Hot-water heating is absolutely safe. The water is open to the atmosphere and the temperature cannot exceed 212° Fahr. The formation of steam is thus impossible. There is no explosive force and no resistance. By following natural laws a perfect system is secured—one that is easy to manage, free from all danger, noiseless in operation, economical and efficient. The water-pipes are never hotter than boiling water, and cannot ignite wood or any other inflammable material that may be near or against them.

Heating by steam is the employment of an agency of high temperature, furnished through a small amount of radiating surface. Heating by water, on the other hand, is the employment of an agency of low temperature, circulating through a large amount of radiating surface.

The boilers used in both systems are very similar in construction. They occupy very little space, and small pipes lead between the floors and ceilings to radiators placed at different parts of the building. The boilers are placed in the cellar or basement.



III IMPROVED TROPIC.

somewhat less expensive than the hot-water system. For fuel economy the advantages are probably in favor of the hot-water system, especially for private-house work. But for large buildings, such as churches, schools, office buildings, etc., the low-pressure steam heating is recommended, especially where there are long lines of pipe connecting the boiler to the different radiators, and where the buildings are only used at intervals, as in the case of churches and schools.

The steam boiler is provided with a gauge for properly indicating the pressure, a safety-valve for relieving excessive pressure; also a water-column and gauge-glass to show height of water in the boiler. The steam boilers are only partially filled with water. The heat from the fire raises the temperature of the water to the boiling point, producing steam. The steam rises and circulates freely through every part of the system of pipes and radiators. The heat of the steam is radiated to the radiators, and from them diffused through the rooms in the same manner as by the hot-water system. The most important consideration in these systems is their unquestioned healthfulness. The operation of heating is simple. The water or steam heats the radiators, which warm the air already in the room. The radiators are placed close to the outer walls and beneath windows. The fresh, cold air must come in contact with the heated iron surface as soon as it enters. Any amount of fresh air can be admitted by these systems, as it must be warmed before diffusing itself through the room. At the same time all cold drafts are effectually prevented.

Even more marked than in the case of heating apparatus has been the rapid improvement which has taken place in the manufacture of sanitary apparatus. Where a few years ago porcelain enameled ware was practically unknown and various forms of unsanitary closets used, to-day there is scarcely a home of any pretensions which is not equipped with pure-white porcelain enameled baths, lavatories and sinks, handsomely nickel-plated, open plumbing and sanitary closets. These plumbing fixtures are not only thoroughly sanitary in every way, but are symmetrical in form and daintily ornamented to harmonize with their surroundings. The best engineers unhesitatingly recommend the low-pressure steam and water heating systems for the heating of buildings and pure-white, porcelain-enameled fixtures for the highest type of sanitary requirements.

The views shown herewith are taken from an interesting booklet, "Common-Sense Heating and Sanitary Plumbing," issued by the Pierce, Butler & Pierce Manufacturing Company, of Syracuse, N. Y., by whose courtesy we are enabled to present the notes relative to steam and hot-water systems and sanitary apparatus.



"TOURNAINE" STEAM BOILER.



A HANDSOME BATHROOM.

Foreign Commercial Guide — Panama. — By Edward James Cattell.—(Commercial Museum, Philadelphia, 50 cents.) To meet the present need for accurate information with respect to the region embracing the Panama Canal, Mr. Cattell has compiled a concise, accurate handbook which will be welcomed by all interested in political or commercial conditions in that part of the world. The author briefly notes the physical and political features, and such commercial topics as banking, weights and measures, postal and cable rates, courts, customs duties, internal communications, resources and imports. One of the most helpful features of the booklet is that part which is devoted to the trade and distributing centers of Panama.



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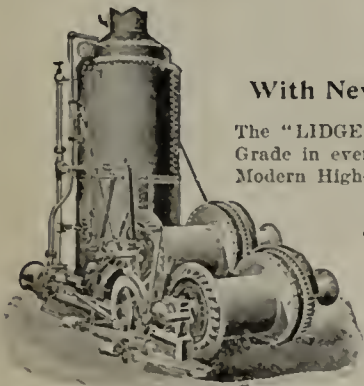
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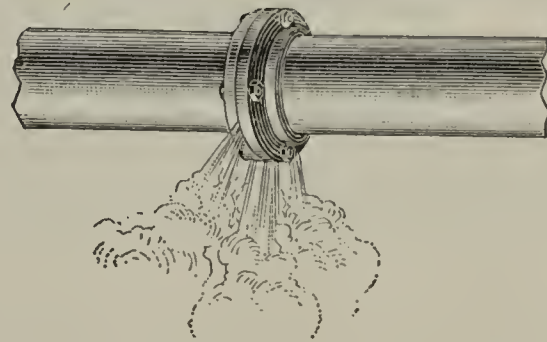
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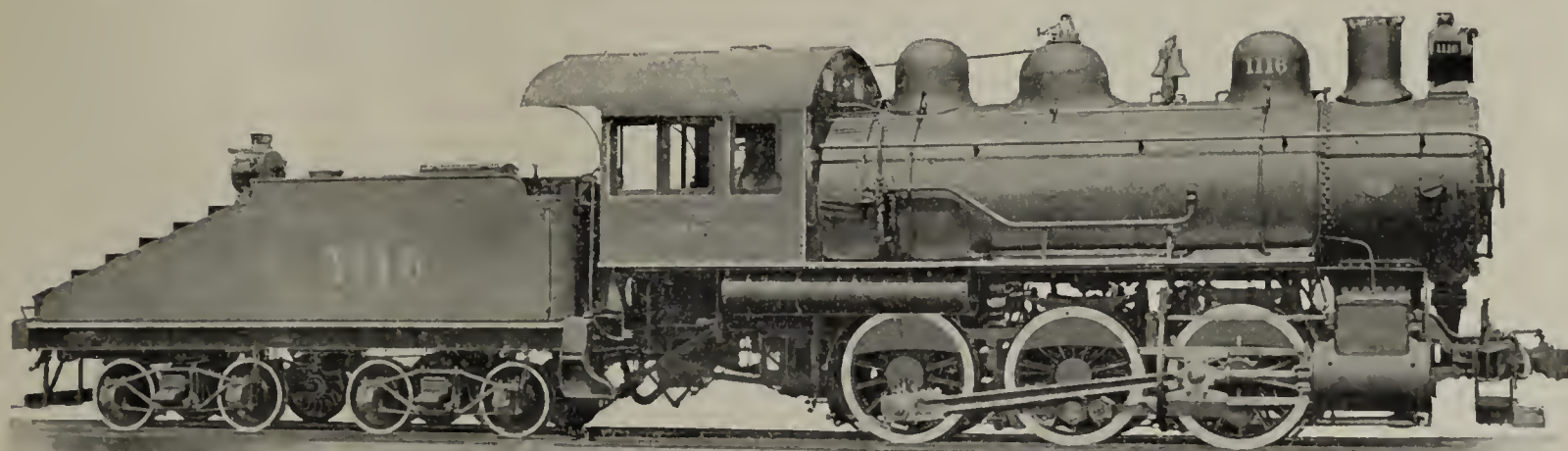
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Net weight, 30 lbs.; gross, 36 lbs. Total length, 18 inches; height, 8½ inches.

"Nothing better can be made; absolutely dust-proof, air and water-tight, and fully warranted."

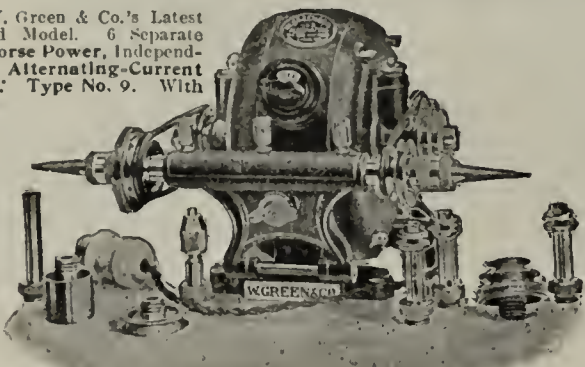
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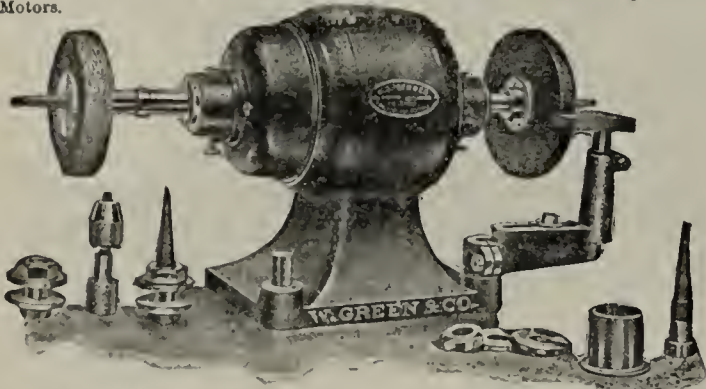
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Net weight, 60 to 90 lbs.; gross, 80 to 115 lbs. Total length, 28 to 30 inches; height, 12 to 14 inches.

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New York

Gentlemen:—In reply to your letter of the 11th inst., beg to say we find the W. Green & Co.'s Electric Polishing Motor perfectly satisfactory, and would ask you to send us bill for same. We will arrange for additional motors later on. Thanking you for your courtesy, we are

Yours very truly,
TIFFANY & CO.

New York, April 3, 1905.
Order No. 1363.
W. Green & Co.,
6 Maiden Lane,
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Gentlemen:—Please send us two W. Green & Co.'s No. 4 1905 Model Motors, 110 volts, 1-5 H. P.; one W. Green & Co.'s No. 6, with special spindle and new model speed controller, No. 11, 110 volts, ½ H. P. Two No. 4's to be delivered at once; one No. 6 as soon as convenient. Yours truly,
TIFFANY & CO.



Net weight, 35 lbs.; gross, 41 lbs. Total length, 16 inches; height, 10 inches.

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With new style Steel Switch, Patent Key Attachment in front, Grindstone and Buffing Chucks with Grindstone and Spindle in position; also Drilling, Grinding and Emery Chucks, Single Cone Pulley, Plug, Cord, etc.

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Our Nos. 4, 5 and 9 Motor Combinations Include following Attachments

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Our Nos. 6 and 7 Motor Combinations include Long Adjustable Spindles, Grinding, Turning and Tool-rest Attachment.

Voltage	Horse Power	Direct-Current Motors		Alternating Current Motors	
		No.	Price	No.	Price
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115 " 220	1-5	4	£ 7 16 3	5	£ 10 12 6
52 " 110	1-5			9	£ 12 10 0
115 " 220	1-5			9	£ 13 8 9
52 " 110	1-4	6	£ 11 0 10	7	£ 15 10 5
115 " 220	1-4	6	£ 11 19 7	7	£ 16 9 2
52 " 110	1-3	6	£ 12 14 2	7	£ 17 14 2
115 " 220	1-3	6	£ 13 17 1	7	£ 19 15 10
52 " 110	1-2	6	£ 15 12 6	7	£ 23 19 2
115 " 220	1-2	6	£ 16 15 5	7	£ 25 0 0
52 " 110	3-4	6	£ 17 14 2	7	£ 27 1 8
115 " 220	3-4	6	£ 18 17 1	7	£ 28 2 6
52 " 110	1	6	£ 23 19 2	7	£ 34 7 6
115 " 220	1	6	£ 26 0 10	7	£ 38 10 10
500	1-4	6	£ 14 3 4		
500	1-3	6	£ 15 12 6		
500	1-2	6	£ 19 3 4		
500	3-4	6	£ 20 8 4		
500	1	6	£ 27 1 8		

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Special Adjustable Single Cone or Flat Motor Pulley with Lathe Attachment for connection with Watch, Optical, Drill or Dental Lathes, Dynamos, Fans, etc.	0 7 4	0 14 7
Ditto, three (3) Cone or 2 or 3-Step Flat Pulley	0 14 7	1 2 11
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Adjustable Drill, Broad or Burr Chuck, with Lathe Attachment	0 12 6	1 9 2
Adjustable Circular Saw Chuck with Lathe Attachment	0 7 4	0 16 8
Circular Saws, high grade, made to fit Chucks	1s. 6d. to 6s. 3d.	0 4 2
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Extra Combined Tool, T-rest and Turning Attachment	0 6 3	1 0 10
Set of extra hangers and nuts for grindstone, etc.	0 3 2	0 3 2
Taper or Flat Copper and Brass Laps to fit Motors, 2-inch diameter	0 5 3	0 7 4
" " " " " " " " 3-inch	0 8 4	0 10 5
" " " " " " " " 3½-inch	0 1 6	
Small Circular File to fit our Nos. 4, 5 and 9 Motors	0 1 8	
Extra Adjustable Plug and Cord to fit our Nos. 4, 5 and 9 Motors		
Outfits of best quality Wheel Brushes, Buffs, Polishing Powders, Pastes, etc., to fit Motors	0 12 6	1 0 10
Medium Size Set	0 16 8	1 7 1
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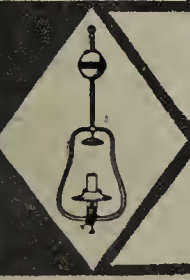
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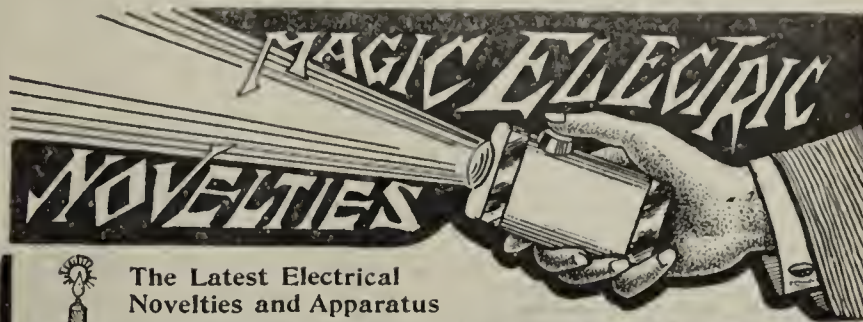
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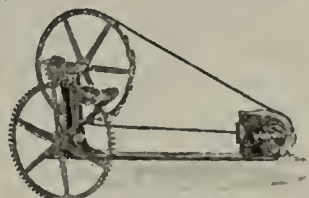
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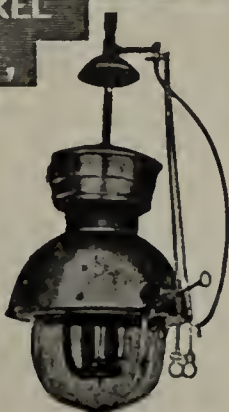
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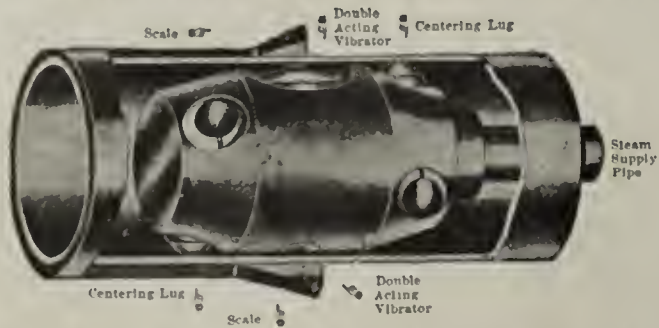
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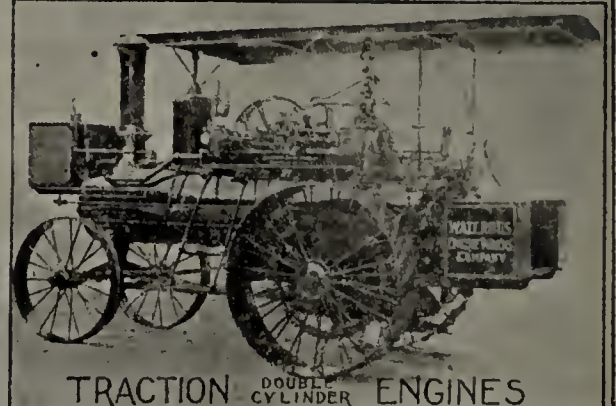
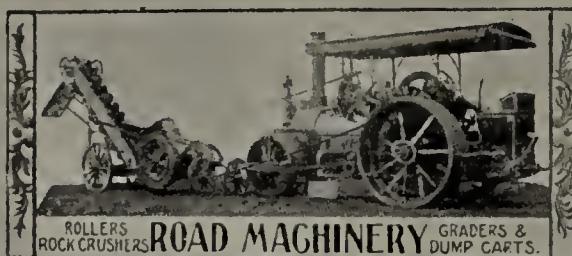
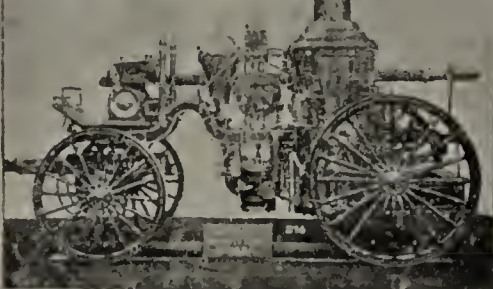


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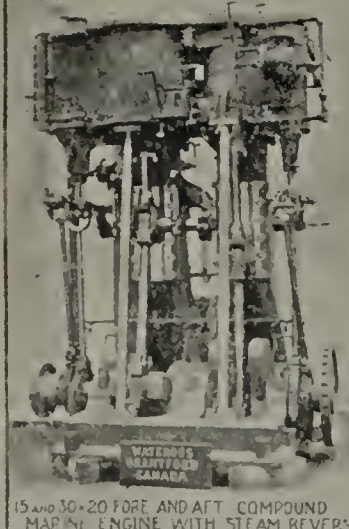
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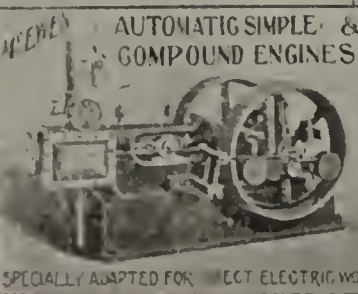


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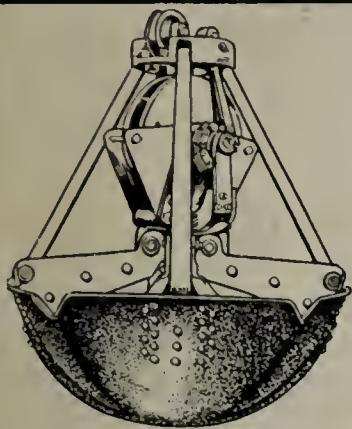
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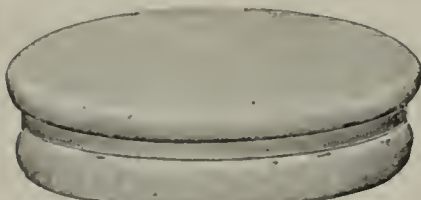
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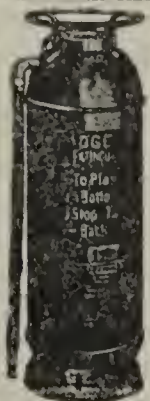
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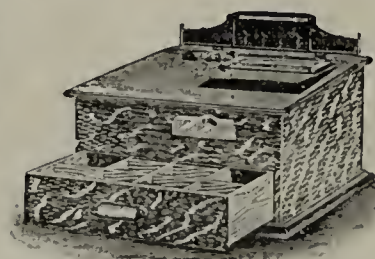


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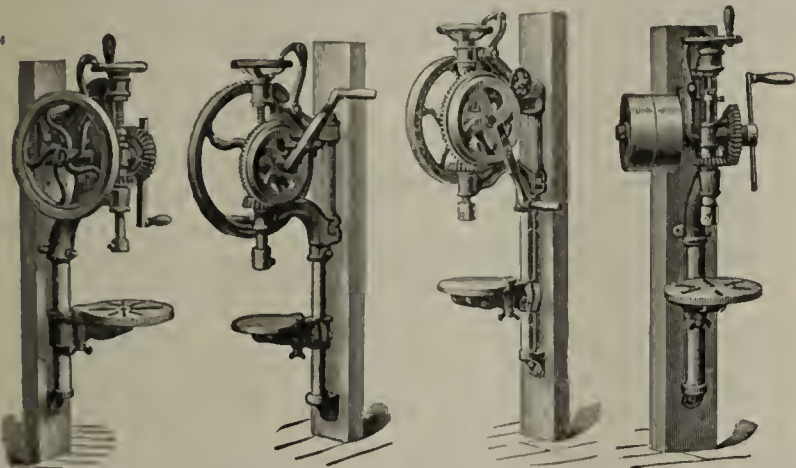


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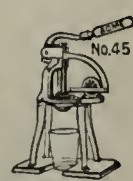
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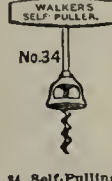
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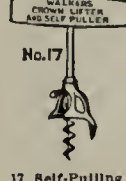
No. 45. Acme Lemon Squeezer.



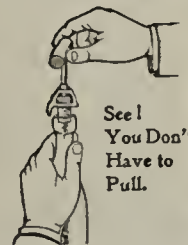
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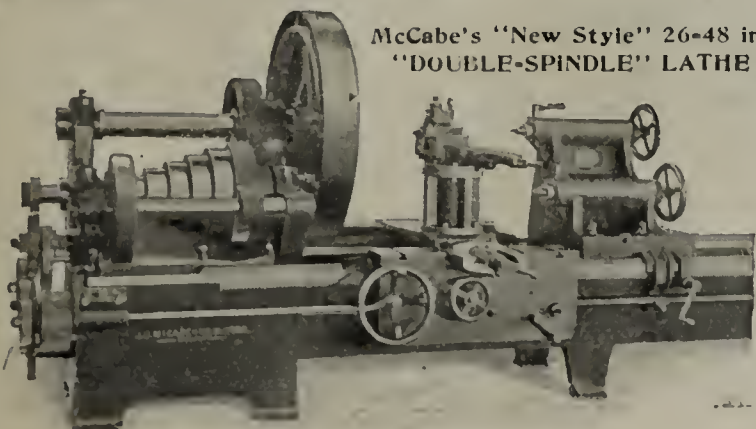


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**Finest Chocolates, Bonbons, Sugared Almonds,
 Gum Drops, Lozenges, Pan Work and Penny Goods,**

Write to

NEW ENGLAND CONFECTIONERY COMPANY,

Circular B. 253 Summer St., Boston, Mass., U. S. A.



McCabe's "New Style" 26-48 in.
 "DOUBLE-SPINDLE" LATHE

YOU DECIDE IF 2 LATHES ARE BETTER THAN ONE

Take your choice—McCabe's "DOUBLE-SPINDLE" or the regular "single."

You'll pay more for a 48-inch Lathe, but you won't get "more"—you get less—one Lathe's worth of "differentness."

McCABE'S "DOUBLE"

Gives you the extra capacity of a 26-inch that you don't get on the regulation 48-inch. Sort of a "utility" Lathe, as it were—to keep the Lathe a-running—when "all out" of big work.

One can't but fancy that it's a "purty profitable" Lathe that has already won the regard of over 500 shops.

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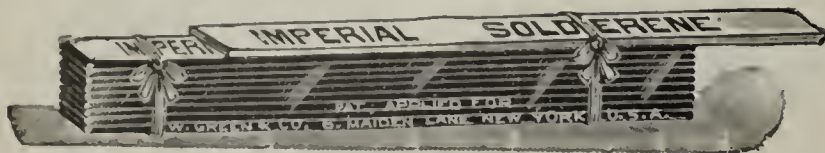
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A SOFT SOLDER THAT HOLDS— THE IMPERIAL SOLDERENE

Solders Without Acids, Fluids or Pastes.

The "Imperial Solderene" solders gold, silver, copper, tin, brass, zinc, iron, steel without acid and, in fact, anything and everything the old soldering iron accomplishes with bar or wire solder, and by using which it is necessary to put on acids, rosin, pastes, etc.

Will not injure the most delicate work, and is especially useful on the finest wires and instruments. For small connections only four or five seconds are required for complete soldering.



For All Trades and Mechanical Purposes.

Don't take our word for it, but send for a sample and test it in any way you please.

Its Merits

It has a greater fluxing strength than solders requiring acids.
No corrosive acids around the bench.
It melts and flows at 360° Fahrenheit.
It takes a higher temperature to remelt.
It is the best conductor of electricity and heat.
It has greater strength than any other solder.
Only one application is required to work it.
Two-thirds of the working time is saved.
Stability between hard and soft solder.
No odor or smell of acid after application.
A little goes a long way.
No waste of time or material.

Price, 10d. per bundle of 8 sticks; sample bundle by mail, 1s. One bundle is sufficient for 200 to 400 joints, connections or repairs. Quantity quotation upon application to your Commission Merchant, or our Wholesale Distributing Agents in

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Don't buy any kind of an Electric Battery until you get our Special Prices for Export. Agents wanted everywhere.

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FISH AND LARD OIL.
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"New Easy," Four Sizes

"Easy" and
"New Easy"

Electric Wire
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Manufacturer of
**Bolt Clippers
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Known and
Used in
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Established 1859

NASHUA, N. H., U. S. A.

The drawer is made with OAK OR BLACK WALNUT FRONT, varnished and polished. The slides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17 x 18 in.



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The Lock Has
32 Combinations,
which can be changed instantly,
and CANNOT be discovered by
the feeling of the finger keys.
This lock is safe, convenient
and perfect. THE ALARM does
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is made to open the drawer by an unauthorized person.

This drawer is the original
automatic alarm cash till of
America and is now in universal
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Pays a larger dividend upon the amount invested than does any other known device made for the pleasure-loving public.

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Gentlemen:—Please find check as per enclosed invoice.

I want to say that engine is running perfectly. I am delighted. Made some little changes in the method of mounting and have overcome all the difficulties experienced last fall.

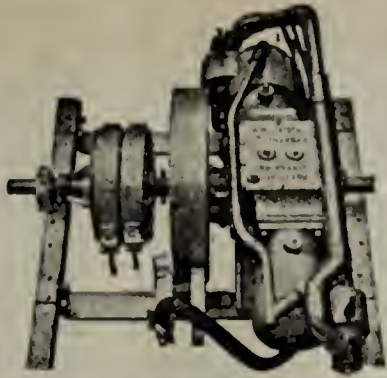
If I can be of any service to you in this part of the country, do not be afraid to refer any one to me, for I am out to do you all the good that I can, both for the way that my engine runs and for the treatment accorded me by your firm.

Very respectfully yours,
(Name given on application.)

BRENNAN MOTOR CO., Syracuse, N. Y., U. S. A.

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Standard Gasoline Motors for Automobiles, Boats and for Stationary Use.



Brennan Standard Motor mounted with Planetary Transmission Gear. Can also furnish Sliding Gear.

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SETTEES,
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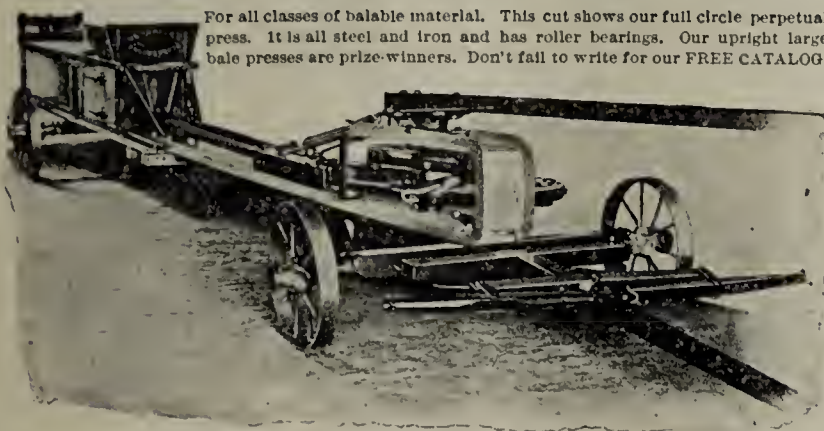
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INVINCIBLE Double Receiving SEPARATOR.

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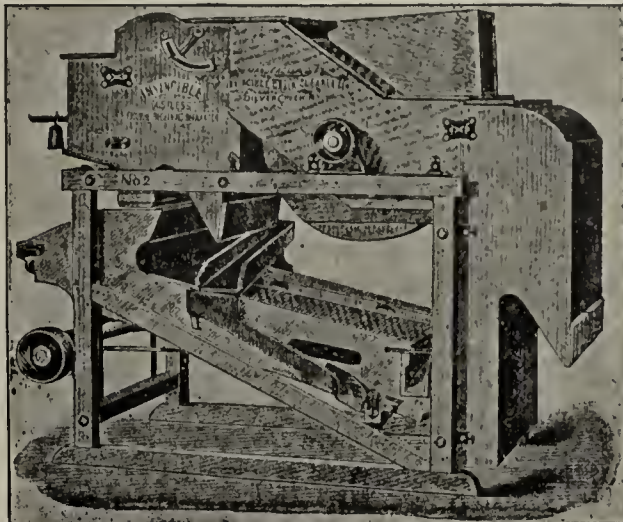
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Silver Creek, N. Y.,
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This Separator removes from grain all dust, chaff, straw, sticks, headings, chaff, cockle, smut and all impurities. Built on honor, of best materials and in the most workmanlike manner.

Has automatic feeding arrangement, is efficient and economical. Send for full description and price to above address or to our

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Manufacturers of

"EUREKA"

Grain Cleaning Machinery,

Seed Cleaners, Flour, Bran and Feed Packers, Cement and Plaster Packers, Coffee Roasters, (Gas, Coal and Coke) Coffee Cleaners and Polishers, Coffee Hullers, Rice Hullers, Graders, Separators and Cleaners. Special Machinery for Flour Mills, Grain Elevators and Warehouses, Cement Mills, Rice Mills, Coffee and Spice Mills.

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Established 1856.

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Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

Our catalogue, illustrating and describing the various styles of

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Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.

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The ZEBUAZO Whip. It stands, swings and wears like WHALEBONE.

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Illustrated Catalogue Furnished on Application.

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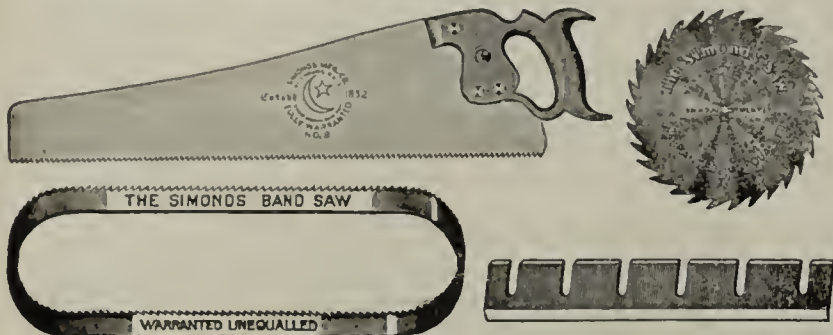


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JAMES OHLEN & SONS SAW MFG. CO.,
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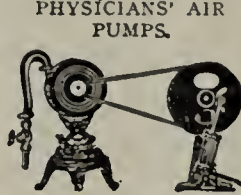
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WATER MOTORS AND FANS, ETC.

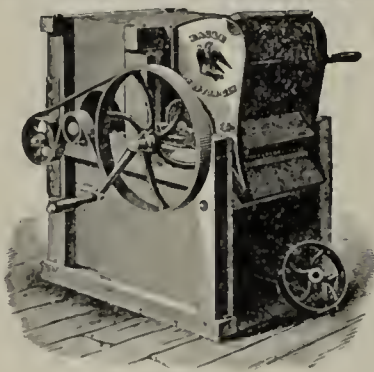
Adjustable Every Way While Running.

Patented June 28, 1898.
PHYSICIANS' AIR
PUMPS.

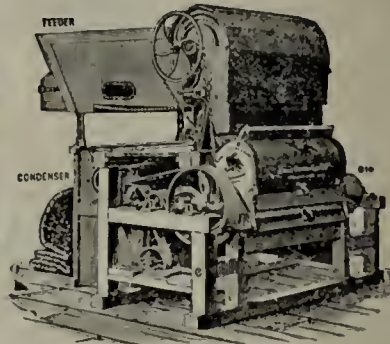
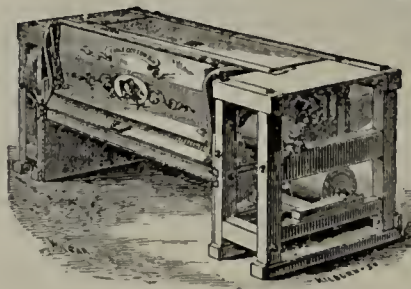
FANS. WATER MOTORS. Beware of Infringements.
SMALL DYNAMOS
AND MOTORS.



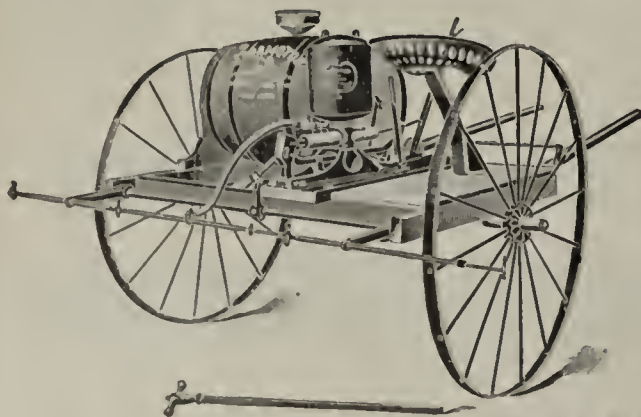
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Hand Glu.



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WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPINAMOTOR.

The Spramator has been adopted by the Russian, Canadian, Belgian and New Zealand Governments, as well as in the Experimental Stations of Ontario, Manitoba, Quebec, Nova Scotia, British Columbia and many of the States within the United States of America.

NOTE.—The prices quoted, U. S. gold or its equivalent, are for **Export only**, include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

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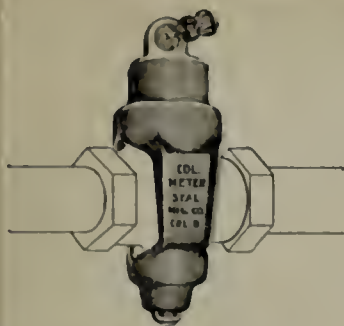
Spramotor No. 1, as illustrated, with ten feet of hose, patent band valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65½ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete, **\$15.00.**

Spramator No. 1, price per dozen.....\$166.32
 These machines will apply any kind of COLD WATER or OIL PAINT.

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Gas and Water Companies SEAL YOUR STOP COCKS

with our seal. It will save you many times the cost. We manufacture thirty styles of lock seals. Write for catalogue and price-list.

The Columbus Meter Seal Mfg. Co.
Columbus, Ohio, U. S. A.



RAWHIDE LACE LEATHER

AGENTS ALL OVER
THE WORLD.

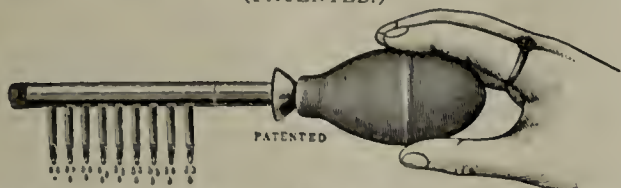
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(PATENTED.)



THE ONLY EFFECTIVE HAIR-GROWING COMB.

A new, useful and wonderful invention for applying liquids directly to the roots of the hair where wanted. Absolutely necessary for the effective Cure of Dandruff and Falling Hair, and the proper application of tonics, dyes and bleaches. Packed in elegant box.

SPECIAL INTRODUCTORY OFFERS:

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The above prices are made especially for the foreign introduction of this useful invention. A sample order of any of the above-named quantities will demonstrate the exceptional merits of the comb. A good supply of advertising matter sent free with each order. Sole agencies extended to reliable firms, and orders executed either direct or through export commission houses. Correspondence solicited.

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Complete Belting Equipments

WE equip entire plants with Belting, or can supply Belting for any regular or special use in any size and quantity. Our Pure Oak Tanned Leather Belting is the standard of the world—made from the best stock, the best treatment, by highly skilled workmen. We pay special attention to orders for export, and invite you to send for our catalogue giving complete information about Belting.

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ONLY MANUFACTURERS,

The CHERRY CHEMICAL CO.

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RED SEAL
BOILER
COMPOUND

Saves fuel, time and labor; purifies the water; prolongs the life of the boiler; prepares the water to make pure steam. Its action on old scale is gradual but certain. Prevents grooving, pitting and wasting of Iron. Does not injure or corrode the Iron.

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RED STAR BOILER COMPOUND

Is the **one** boiler fluid that has proven a success everywhere. Its reputation as a feed-water purifier and lime-scale decomposer is established,



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All shipments are made in steel drums, eliminating all leakage. Packages weigh approximately 275; 380, 530 pounds net, billed as half, three-fourths and full-size drums. Foreign trade solicited through exporters, 96-page booklet mailed **free** upon request.

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GERM-PROOF, QUICK-FLOWING GRAVITY FILTER

Removes all impurities. Makes the dirtiest water as clear as crystal. Prevents Typhoid, Malaria and all diseases caused by drinking impure water.

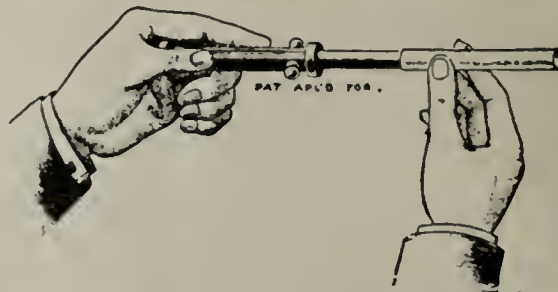
Each filter packed in a box, with full directions. Size, 4 1/2 inches square. Weight, 2 pounds. Sample sent by prepaid express for \$1.20, or through any New York commission house. Printed matter supplied in any language. We also make pressure filters of any capacity.

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Greatest Invention of the Age for Cigarette Smokers.



It enables smokers to make their own cigarettes by using ready-made tubes which we supply with our machines. Plain or fancy tips can be had. Different grades of tobacco may be mixed to suit the smoker, and, while saving 300 per cent., he smokes at the same time the tobacco that suits his taste best.

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The Best-Selling Shoe Polish

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TO OPEN THE BOX
TURN THE KEY.

EVERY BOX HAS OUR OPENING KEY
ATTACHED TO REMOVE THE COVER.

BLACKOLA is different from every other shoe
polish in quality and convenience.

MANUFACTURED SOLELY BY

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YORK, PA., U. S. A.

The Premier American Shoe Polishes.



OKOLITE,

An Oily Paste Polish for ALL
Black Leathers, Also

Brown Okolite

For ALL Russet and Tan Shoes.

We are manufacturers of over 60 varieties of Shoe Dressings,
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SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for \$12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

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The Springfield Tire and Rubber Co.

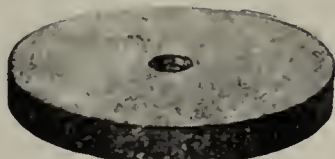
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Springfield Abrasive Polishing WHEELS and Blocks.

WHEELS, 2 to 18 inches in diameter and
1/4 to 4 inches thick.

Made in different sizes.
Unrivalled for removing
rust spots, cleaning
and polishing steel and
other metals, giving
them fine and smooth
surface, not scratching
or injuring.



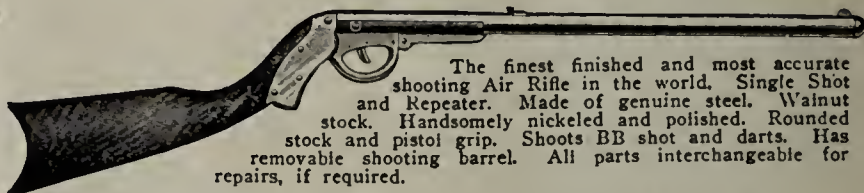
Made with Emery or
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dry or with water, but
not with oil.

Wheels made in sizes
from 2 in. to 18 in. di-
ameter, and from 1/4 in.
to 4 in. thick.

Blocks of 3 to 12 inches long. Blocks of 1 to 3 inches wide.
Blocks of 1/4 to 2 inches thick.

Prices and discounts on application. Send for catalogue. Mention this paper.

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The finest finished and most accurate
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stock. Handsomely nicked and polished. Rounded
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OUR SPECIAL OFFER FOR FOREIGN MARKETS:

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Single Shot Air Rifles and one dozen "King" Repeating Air Rifles. Four boxes
in all, crated. Gross weight, 112 pounds. Net weight, 84 pounds. Dimensions,
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The "King" Air Rifle sells quickly and satisfies the buyer every time. It's
a gun-like gun and a reliable Air Rifle.

We are the originators and inventors of the Air Rifle and have the largest plant
devoted exclusively to the manufacture of Air Rifles in the world. This of itself
is strong evidence of the superiority of our Air Rifles.

Order through any responsible exporter. Send for Catalogue of our full line of
Air Rifles.

THE MARKHAM AIR RIFLE CO.,

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EAGLE MOP WRINGERS AND BUCKETS COMBINED



Are used in homes, public build-
ings, hotels, barrooms, barber
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clubrooms, office buildings, rail-
road stations and everywhere
mopping up or washing is done.

DIRECTIONS FOR OPERATING:

Put left foot on foothold to hold pail sta-
tionary, the other foot on lever; press lever
down and rolls will close tightly together;
pull mop straight out. Pressure obtained
from 0 to 200 pounds, as may be required.

Send for Catalogue.

Eagle Cooperage Works, Sole Manufactur-
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ELECTRIC



WALL-PAPER CLEANER

Make OLD or SOILED Wall Paper or Carpets LOOK LIKE NEW.

Electric Wall Paper and Fresco Cleaner.

Cleans easily and perfectly. Al-
ready prepared for use. Will keep
for years. Contains no water, there-
fore does not mould nor dry out.
Any one, even a child, can use it, as
it is impossible to streak the walls
with it. It is a thorough disinfectant
and leaves a room clean and healthy.

Put up in 16-ounce labeled tin cans.

Electric Cleanser.

Cleans Carpets, Rugs, Curtains,
Woodwork, etc., and removes dirt
and spots from Carpets without tak-
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Put up in 16, 10 and 2 ounce enameled
cans and 25-lb. pails; 250-lb. barrels.

Prices and further particulars on
application.

The Electric Cleanser Co., Canton, Ohio,
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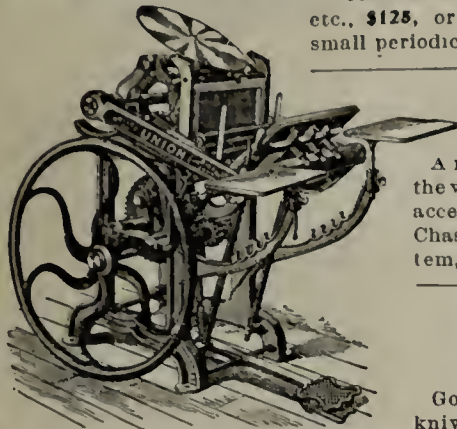


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

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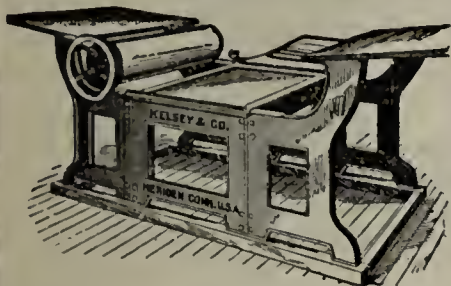


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, \$200. Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., \$400, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, \$12.00.



Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches. Price, \$500. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

The VAN BIBBER ROLLER CO.

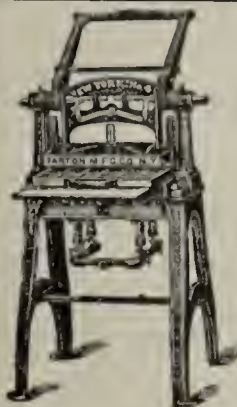
CINCINNATI, OHIO, U. S. A.

VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

PRINTERS' ROLLERS

For ANY climate, hot or cold, can be made at once by any printer. You can make the best rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price, 35c. List per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Aminek & Co., American Trading Co. or any other responsible New York exporter.

Printers' Roller Composition.



RUBBER STAMPS

Can be made with good profit, and without previous experience on our

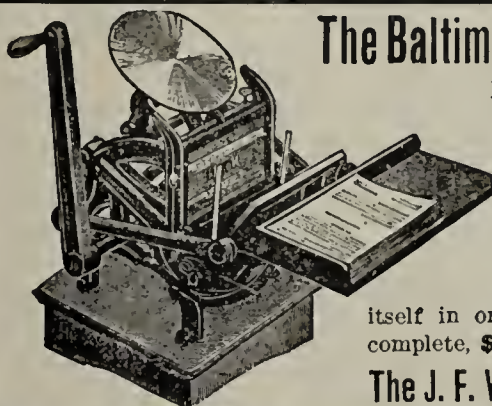
Patented Automatic Vulcanizer and Mould Press.

Full instructions with each outfit.

COMPLETE MANUFACTURING OUTFITS, \$25 TO \$100.

Send for Export Catalogue No. 1.

BARTON MFG. CO., 335 BROADWAY, NEW YORK, U. S. A.



The Baltimorean Printing Press No. 14

Will print a form of type 6x9 inches, so that any merchant, banker, druggist or other business man can print his own letter heads, circulars, notices, business cards or envelopes, and will pay for

itself in one year. Price, with type, complete, \$35.00.

The J. F. W. Dorman Co., Baltimore, Md., U. S. A.

IRVING'S NEW WIZARD OR "GY-ROTARY" TOP

"The Quickest Money-Maker Ever Placed Upon the Market."

Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high-speed machine, made of STEEL, nickel-plated; capable of 20,000 revolutions per minute, and can be put in motion by a child in three seconds. Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

FOR EXPORT ONLY—\$9.00.

Upon receipt of \$9.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, one gross (144) IRVING'S NEW WIZARD OR "GY-ROTARY" TOPS. Weight, boxed, 30 pounds. Size of box, 17½ x 8½ x 8½ inches.

ORDER NOW. YOU WILL SURELY WANT MORE.

Wizard Novelty Co., Inc., Philadelphia, Pa., U. S. A.



Patent Applied for July 19, 1904.



A few of the many positions in which this wonderful top will spin.



SPRING-WINDING TOPS

No string—just wind them up, push on the stem and away they go spinning with great force. Any child can spin them. The most popular and fascinating tops on the market. Spin the longest.

"NEVER-STOP" HUMMING TOP

Made of metal and indestructible. Spun by an automatic spring device which cannot get out of order.

It's a Beauty and a Great Hummer

Measures 10 inches in circumference. Handsomely enameled in five colors. Packed one dozen in box, assorted colors.

For Export Only.

Upon receipt of \$30 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, 4 gross (576) "Never-Stop" Humming Tops. Weight, boxed, 100 pounds. Box measures 7 cubic feet.

The Famous Spring-Winding FLAG TOPS

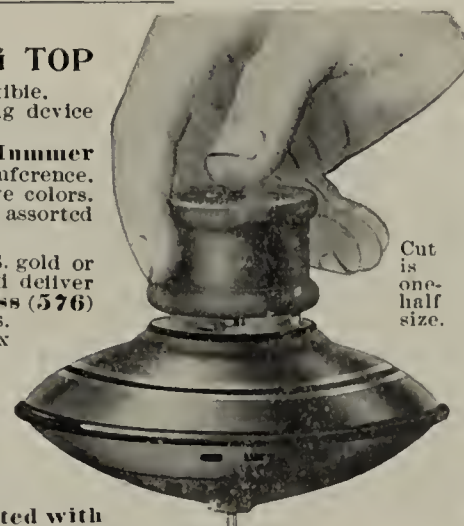
These tops are ornamented with the National Flag colors of any country desired. Mention country when ordering. The funniest top you ever spun. Spins on either end, or in the holder, when inverted and held in the hand. Made of hard wood with metal points and beautifully finished. Packed two dozen in a box.

Upon receipt of \$24 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, 6 gross (864) Flag Tops. Weight, boxed, 100 pounds. Size of box, 4 cubic feet.

Cut about one-half size.

THE GIBBS MFG. CO., Canton, Ohio, U. S. A.

Also makers of the "Duchess," "Princess" and "Special-Select" Embroidery Hoops...



Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This set represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent, on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the iron that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65

SIX-SECTION CASE.

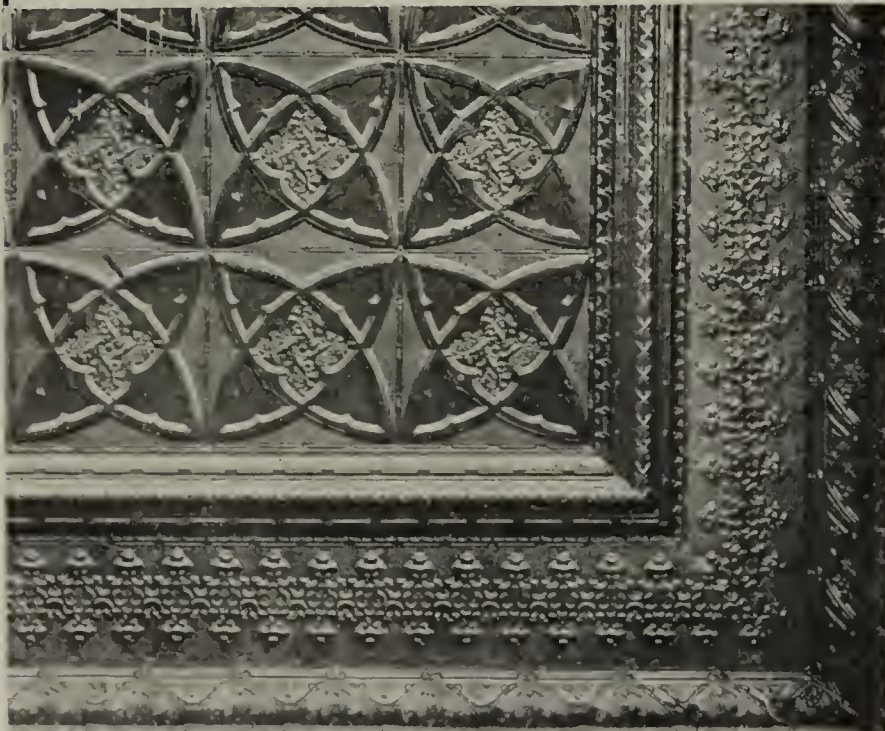


Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.

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Large and Complete Line of Classified Designs



New Catalogue "A" Sent on Request to Those Interested
SPECIAL PRICES FOR EXPORT

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For Violin, Guitar, Mandolin,
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Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

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That we make Metal Ceilings, and are prepared to fill orders for any part of the world in a remarkably short space of time. If you don't know, let us prove to you that "Wheeling" is the ceiling you are looking for, by sending one of our

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will be more evident from a study of our Large Catalog. Write for it. Designs appropriate to every kind and class of structure.

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Pot,
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Glass
Lining,
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Orders filled through commission houses.
Correspondence solicited.
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Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

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Manufacturer and Exporter of

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ALSO PRINTERS' COMPOSING AND MAKE-UP RULES, AND OTHER SPECIALTIES.

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CHAINS.

Gents' Watch Chains in all varieties of style and length.
Artistically Designed Ribbon and Metal Fob Chains.
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HIGHEST QUALITY.

POPULAR PRICES.

CORRESPONDENCE SOLICITED.

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THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of time-pieces. The output is five thousand watches per day, which go to all parts of the world.

PRICES

Yankee, \$7.80 doz.

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Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 1½ cu. ft.

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Watches

The Western Clock Mfg. Co.

La Salle, Ill., U. S. A.

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Sole Manufacturers of the "AMERICA" Alarm

Fancy
Clocks
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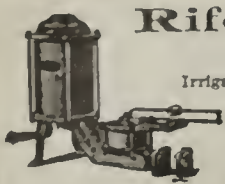


"The American"



"Imperial"

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Rife Hydraulic Engine.

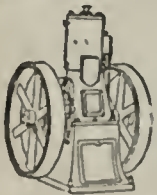
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Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

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KEROSENE ENGINES.

Safe, Sure, Simple, Reliable, Efficient and Economical.
CHEAPEST POWER ON EARTH

FOR PUMPS, MACHINERY OR ELECTRIC LIGHT PLANTS.

Cheaper and safer than gasoline. No spark. No igniter. No carburetor.

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A never-failing water supply with absolute safety, at small cost, may be had by using the

Improved Rider Hot Air Pumping Engine

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Built by us for more than 30 years, and sold in every country in the world. Exclusively intended for pumping water. May be run by any ignorant boy or woman. So well built that their durability is yet to be determined; engines which were sold 30 years ago being still in active service. Send for Catalogue "Z" to nearest office.

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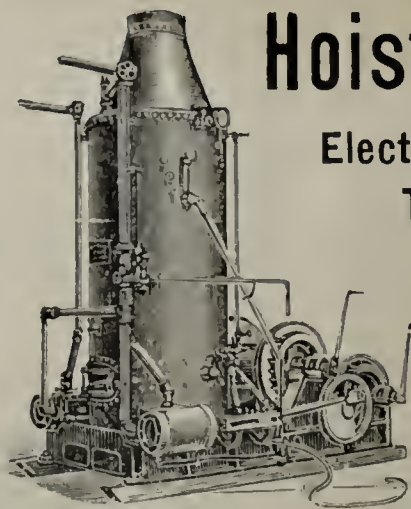
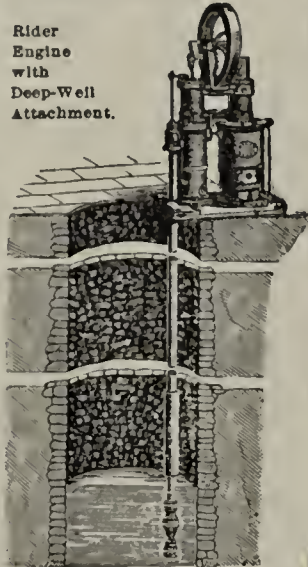
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Rider
Engine
with
Deep-Well
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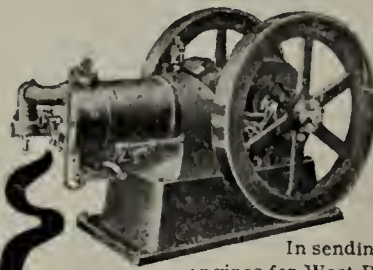
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All of Latest Improved Type

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In sending out their last specifications for gasoline engines for West Point, the U. S. War Department required them "to be OLDS ENGINES or equal." This means they excel all others, or the U. S. Government would not demand them.

They are the horizontal type, 2 to 100 h-p., and are so simply and perfectly made that it requires no experience to run them, and

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Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

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Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable Outfits operated by Man Power. We furnish

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Steam Rigs for 200, 350, 600 and 1,000 ft.



Horse-Power Drilling
Machines for Wells
of 200 to 400 feet.



DEMING PUMPS,

HAND AND POWER,

Known everywhere as "THE WORLD'S BEST."

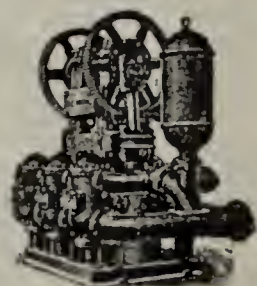
Cistern and Pitcher Spout Pumps, Hand and House Force Pumps, Deep Well Pumps and Standards, Iron and Brass Cylinders, Windmill 3-Way Pumps and Standards, Triplex Power Pumps, Rotary Pumps, Hydraulic Rams, Irrigating Pumps and Cylinders, Spray Pumps, etc., etc.

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"A Perfect, Cleanable Refrigerator."

Leonard White Enamel Refrigerator No. 883

Is Made of Solid Oak; Front Panels Quarter-Sawn Oak; insulated with Mineral Wool; Sliding Adjustable Shelves; Golden-Oak Finish, Eight Walls;

WHITE ENAMEL LINED.

Inside measurements, 36 x 22 x 15 inches. Net weight, 195 pounds. Gross weight, packed ready for shipment abroad, 230 pounds. Cubic measure, 21 1/4 cubic feet.

Price, for export only, F.O.B. New York, \$17.70

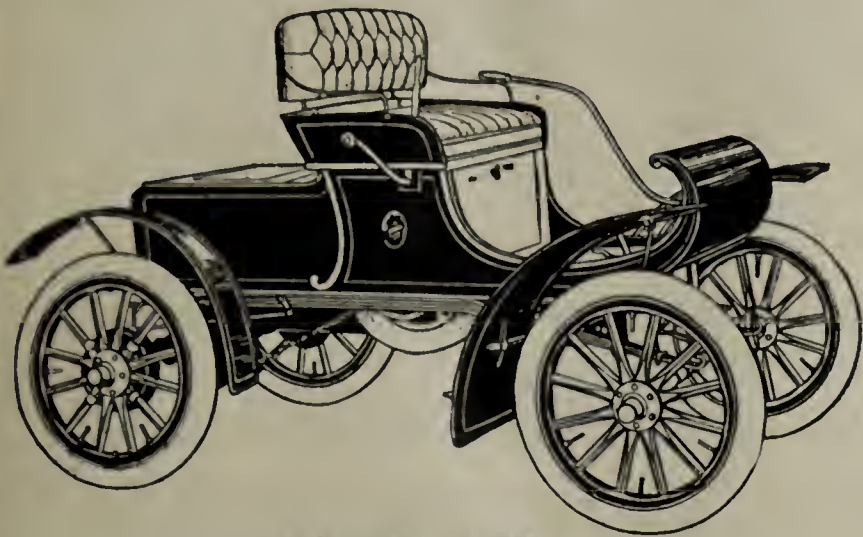
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16-H.-P. Double-Op-posed Engine,
Side-Entrance Tonneau.

Price, \$1,250

8-H.-P. Runabout. Price, \$650

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WHITE STEAM CARS

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ST. LOUIS EXPOSITION



SIMPLE

SILENT

RELIABLE

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COLLECTIONS:

To all Dealers, Banks and Bankers doing business with Yucatan and Campeche, we offer our services for the collection of their bills.

Reasonable fees and prompt reimbursement.

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Besides being Exporters of Sisal Hemp, we deal in Machinery for Cleaning Textile Plants of all kinds.

CORRESPONDENCE SOLICITED.

O. MOLINA Y CIA.,
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Merida, Yucatan, Mexico.

The Largest and Most Complete
Line for Export.

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Ladies' and Gentlemen's
Watch Chains
In All Styles and Qualities

Satisfaction guaranteed on all our chains. We
have just completed the largest catalogue ever
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COMPANY**

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9-11-13 Maiden Lane, N. Y., U. S. A.

Orders Executed Through Commission Houses.



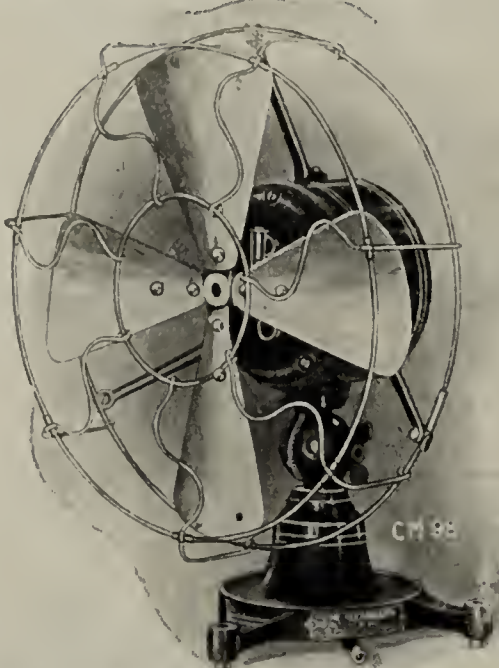


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Where known are recognized as the standard of perfection. They are clean to handle, do not smut or soil the work, are long-lasting and are made from the best colors. Send for catalogue. Orders received through any New York exporting house at export rates.

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"THE STANDARD" FANS



"The Standard" Universal Desk or Bracket Fan.

A Fan which may be mounted either as a Desk or Bracket Fan, and in either position its air current may be turned in any direction desired. No tools are needed for changing from Desk to Bracket, or for changing the direction of the air current.

The above is only one of ten models of Desk, Bracket, Ceiling and Oscillating Desk Fans which we manufacture for all direct-current circuits.

Our Fans are used and well known in all parts of the world, and we have had unparalleled success in meeting the demands and requirements of the trades as they peculiarly exist in the various countries.

Catalogues, prices, etc., will be sent on request.

We also manufacture a complete line of direct-current Dynamos and Motors, in sizes up to 10 K.W. or 15 H.P. Ask for literature covering this line.

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In All Parts of the World:

We can offer you the exclusive agency for our "Kee Lox" hard, clean, non-grease carbons in your country, and we call your special attention to the fact that these carbons possess such superior merit that we know they are just what you have been looking for.

These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

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Samples and further information, together with our proposition, will be gladly furnished on application to the

Kee Lox Manufacturing Company,
ROCHESTER, N. Y., U. S. A.


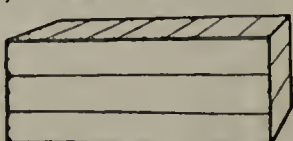
KNOCK-DOWN SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.

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GRAND RAPIDS, MICHIGAN, U. S. A.

8-Foot No. 31 Show Case.

Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 334 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

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Here is a machine that separates milk from cream as soon as the milk is taken from the cow. Holds the world's record as the closest-skimming separator in the world. Has more good points than any other. More sold in United States.

Has received gold medals at all important expositions. Increases the product, decreases the labor and saves time and money.

VERMONT FARM MACHINE CO., Bellows Falls, Vermont, U. S. A.

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FOR EXPORT.

This machine is in great demand, both because of its superiority and because it is most widely advertised.

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ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.



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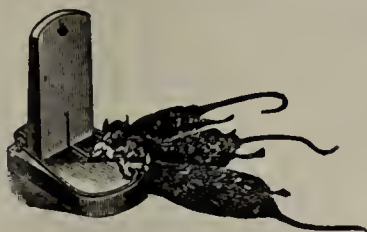
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Made in two sizes:
large size for rats;
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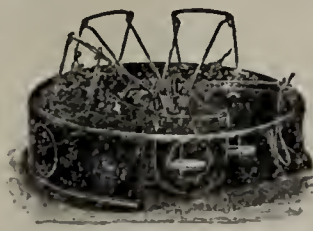
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American Novelties

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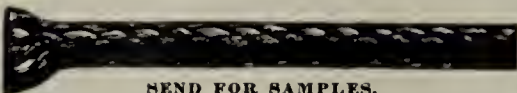
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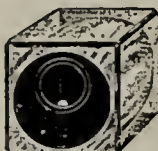


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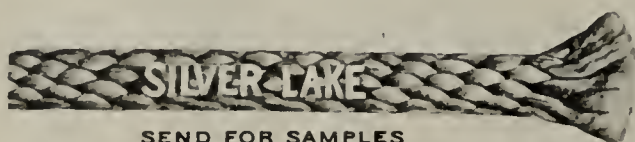
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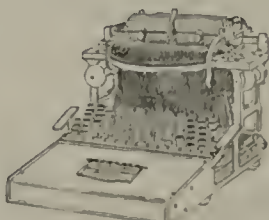
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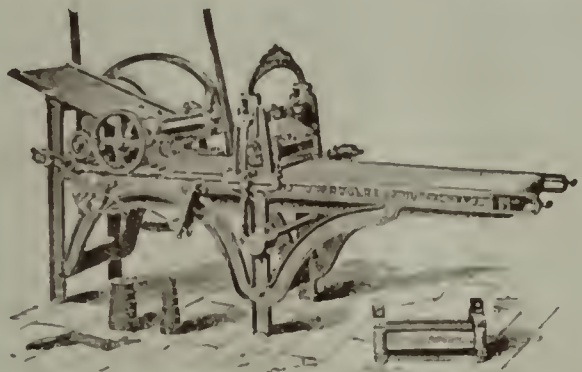
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HAND-POWER BISCUIT MACHINE.

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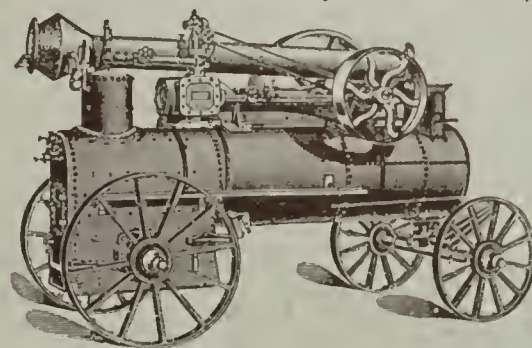
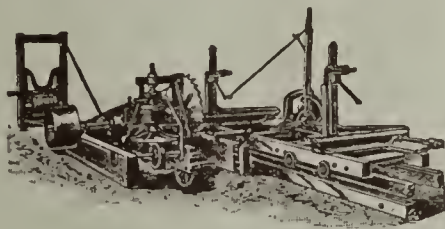
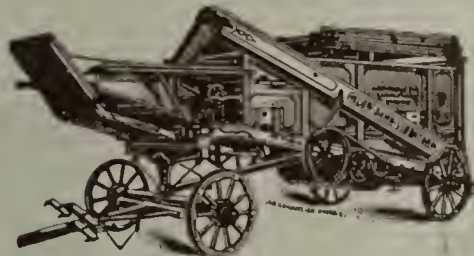
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and Water Supply Goods enables us to keep them up to the highest standard of excellence. This will appeal to all who want a reliable and efficient windmill. The

"STAR" is built in all sizes and designed for various purposes. It is thoroughly gal-

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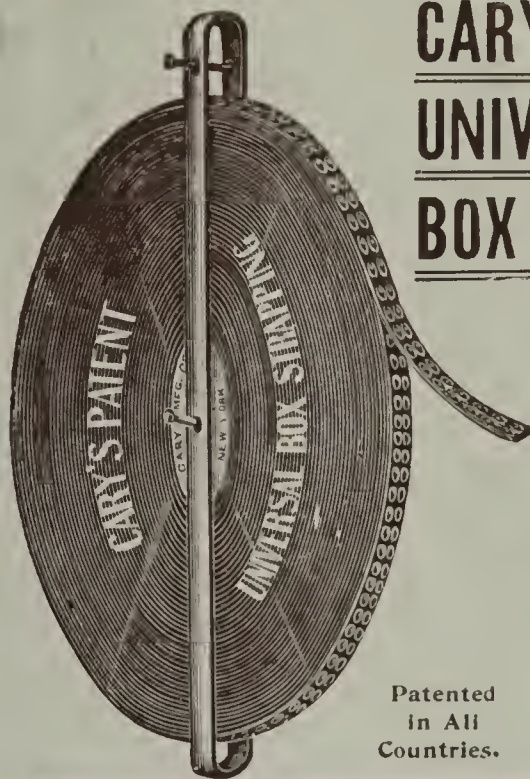
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Eastern Office: 96 Wall Street, New York.

Cable Address: "STAR," Kendallville, Ind.

Codes: Lieber, Western Union, Private, A B C 4th Ed.

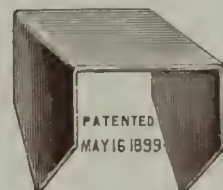
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Made of soft steel through which nails can be easily driven.

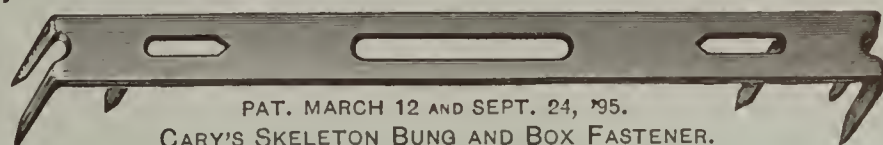
Put up in coils of 300 feet and packed 20 coils in a case.

Made in four widths, viz.: $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ and 1 inch.

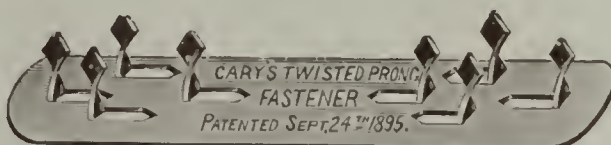


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Patented in All Countries.



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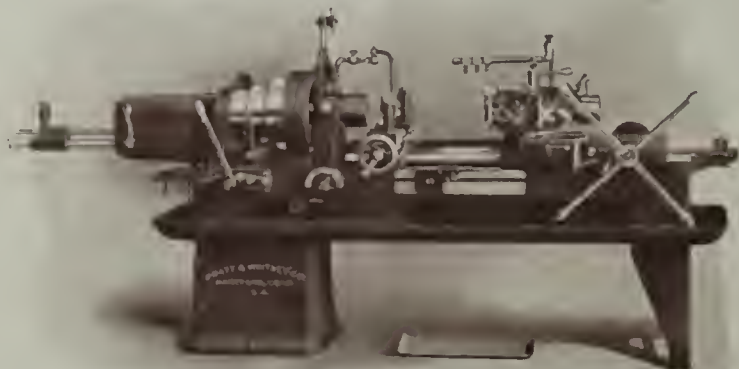
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PRECISION MACHINERY.



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2 x 26-Inch Turret Lathe Five Sizes.



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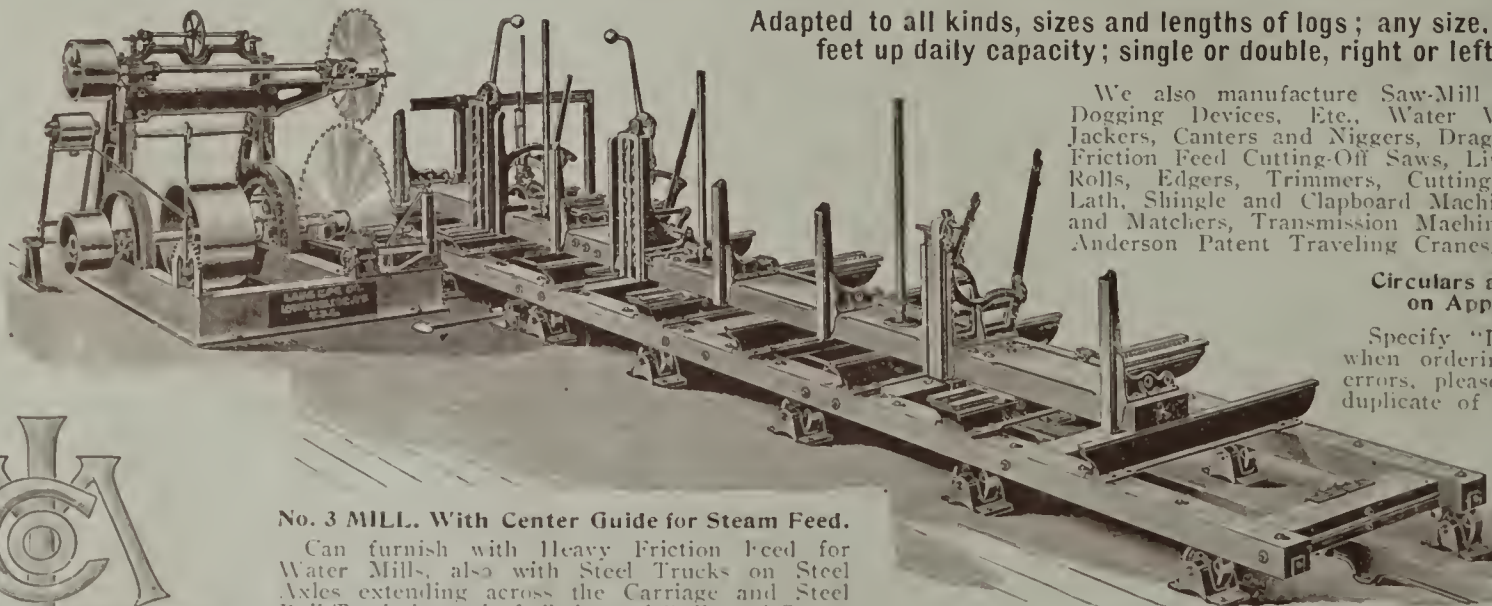
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THE BEST CIRCULAR IS THE

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HIGHEST AWARD—Gold Medal at the South Carolina Interstate and West Indian Exposition.



Adapted to all kinds, sizes and lengths of logs; any size, from 3,000 feet up daily capacity; single or double, right or left hand.

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Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axles extending across the Carriage and Steel Rail Track, instead of Chairs and Rolls and Center Guide, if preferred.

Right or Left Hand, Single or Double.

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AMERICAN EXPORTER

ESTABLISHED 1877—CONDUCTED BY EXPORT SPECIALISTS

Vol. LVI.

NEW YORK, JULY 1, 1905.

No. 2.

The Washer That Works Itself

Our new "**1900**" **Gravity Washer** works by its own weight, as the name suggests. Does *three-fourths* of the work of washing because it works by gravity. On bottom of Tub are fastened four large casters, having wheels that ride around on this track. There is a *pivot*, too, on the bottom of the Tub, to keep it swinging in its right position, with the wheels always in the track.

When you want to *wash*, you put the Tub on its pivot, with its wheels on the track. Then you throw the dirty clothes into it. Then you turn on enough hot water and soap suds to just *float* the clothes. Then you lay the disk on top of the clothes. Then you put its socket on the disk. Then you turn a thumb-screw in the arm, which sets the rod and holds it ready for this famous easy way of washing.

See the handle on the edge of the Tub at its top?

You grasp that handle and *revolve* the Tub one way as far as it will go.

Then you let it go back to where it came from, and revolve it as far as it will go in the *other* direction.

Then you repeat the first motion.

Now let's see what *happens* when we revolve Tub half-way around on its pivot and its four wheels!

Soon as we revolve it in one direction, that starts the soapy water in the Tub turning *with the Tub*, and driving it on *through* the meshes of the clothes when the Tub suddenly stops turning.

But, *what* stops it turning?

Well, when we swing it around either way, on its pivot, the wheels on the track *must* climb a hill.

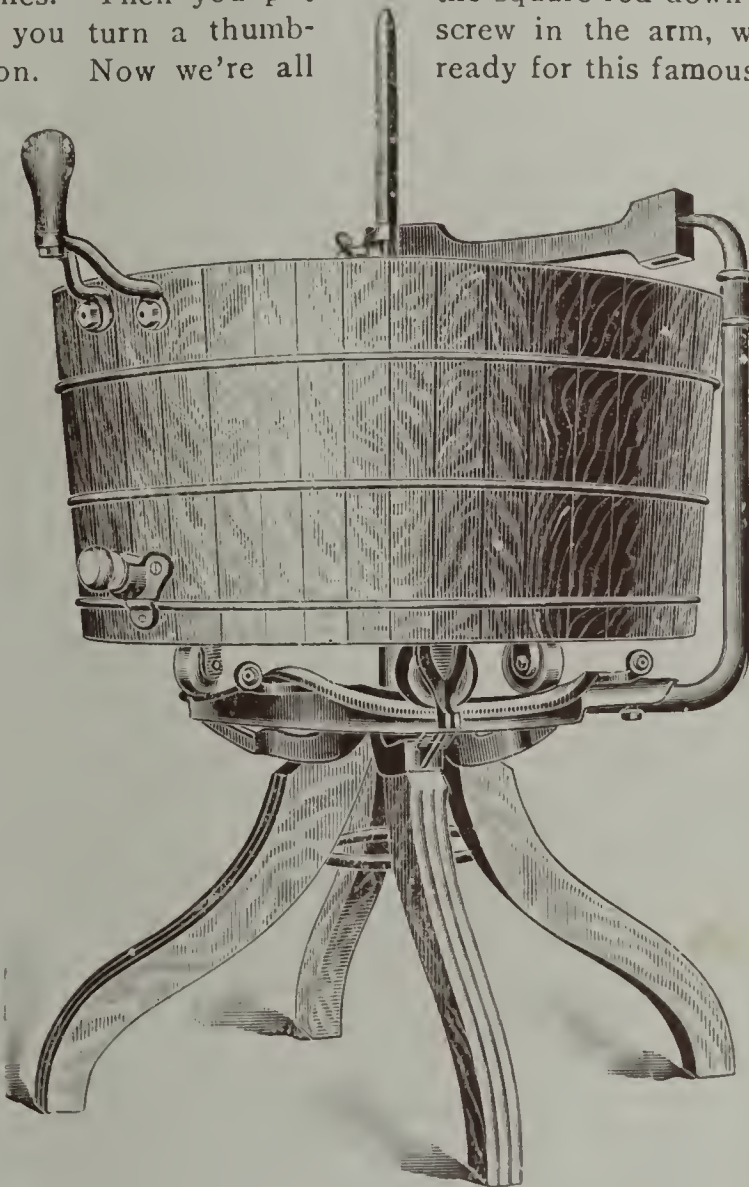
Because the track has four up-and-down *teases* in it. The wheels rest in the four valleys between the four hills of the track, when the handle is let go and the Tub stands still.

Now, when you swing the Tub part way around, on its pivot, the four wheels, or casters, follow the track *up-hill*.

This *lifts* the Tub, and all the clothes in it, up about four inches from the valleys.

And when the Tub *lifts* it *squeezes* the water out of the clothes and presses the dirt out with it between the disk.

Then when the revolving of the Tub has set the water swashing through the clothes, and the *lifting* of the Tub has



squeezed the dirty water out of them again, the Tub drops back into the track valleys by its own weight or gravity.

When it thus drops back, and the casters run *down-hill*, this running down-hill sets the Tub revolving in the *opposite* direction by its own weight.

With a very little help from you it now *climbs* the opposite track hill, sets the water driving through the clothes in the opposite direction, and squeezes the dirty water out of them as before.

Observe that there is no rubbing of the clothes, as on Washboard or other Washing Machines.

No scrubbing, stretching, Wear and Tear, on the garments.

Just soapy water driven *through the meshes* of the clothes by the revolving of the Tub, and that same water squeezed out of them at each half-revolution and each rise of the Tub.

This is why the finest lace can be washed by the "1900 Gravity Washer" without fraying a thread, or tearing a buttonhole, or breaking a button.

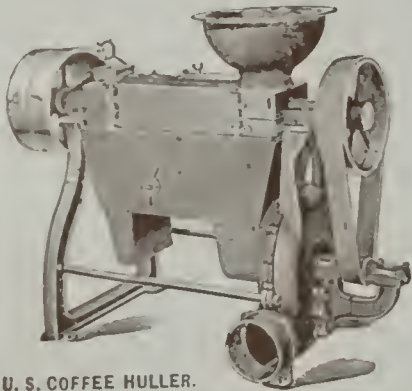
And it will wash dirty overalls or heavy blankets with equal ease and rapidity.

A child could run the "1900 Gravity Washer," and could wash a Tub full of very dirty clothes in six minutes better than they could be washed by hand in twelve to fifteen minutes.

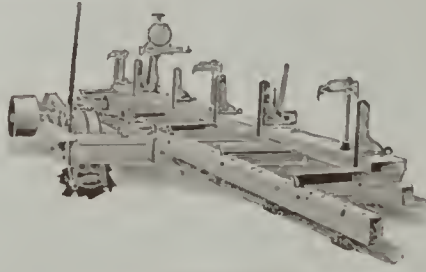
We have tried to tell you *how* the "1900 Gravity Washer" works, *what* it will do and *how* it does it.

Isn't it plain that this is a washing machine that you can sell readily and in large numbers? We export them to all parts of the world. Write us to-day for complete information and export prices. Orders filled through commission houses or direct.

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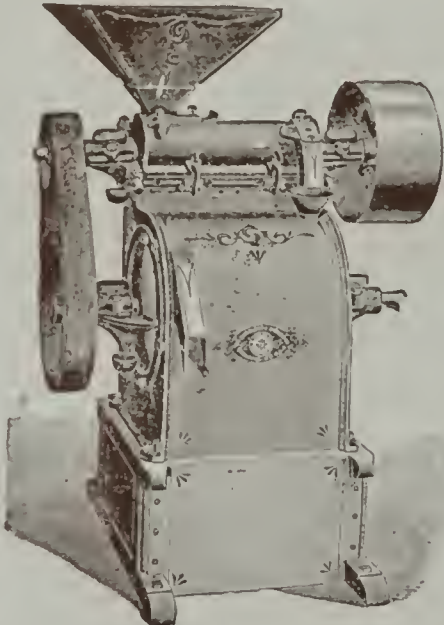
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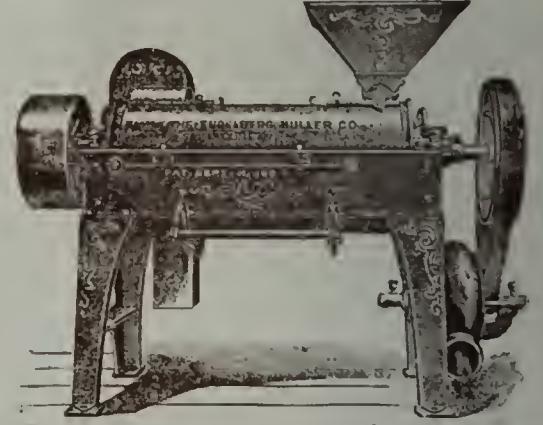


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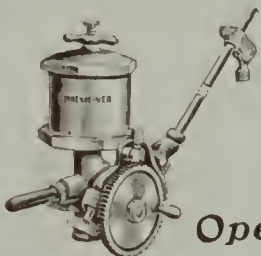
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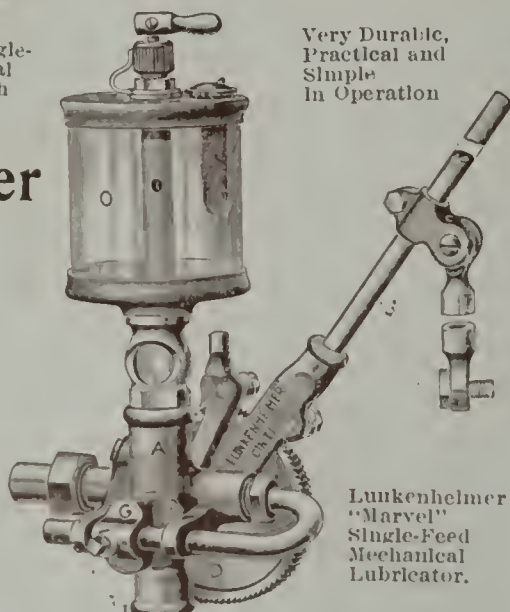
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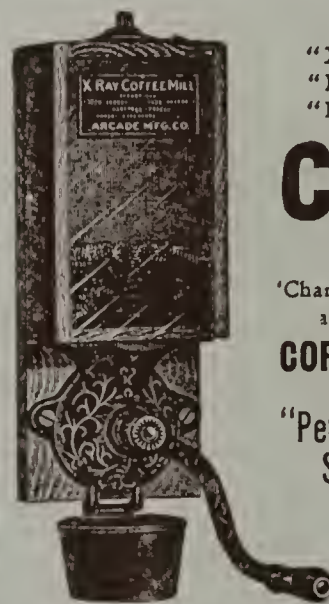
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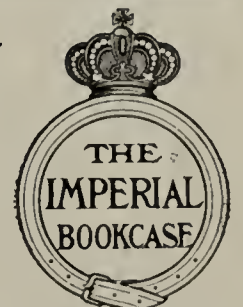
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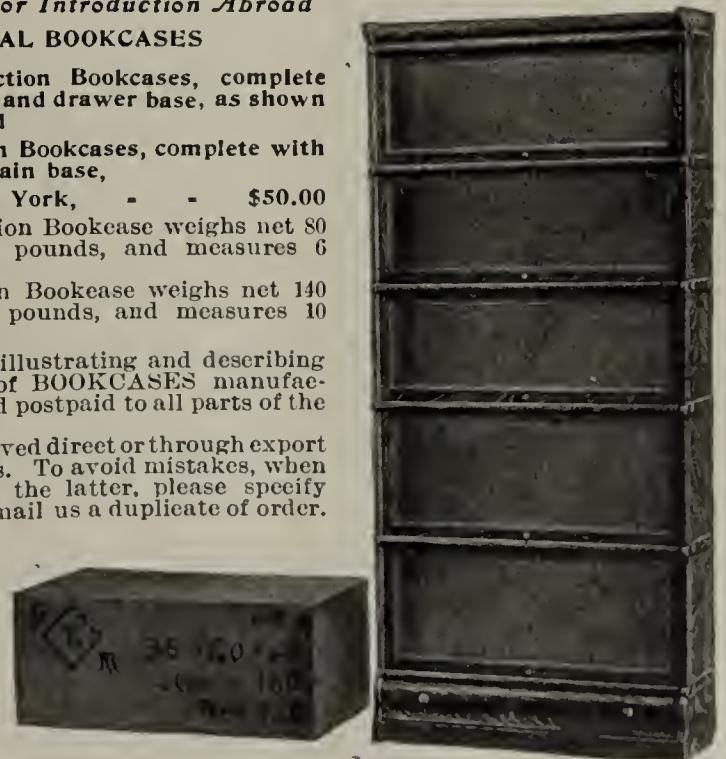
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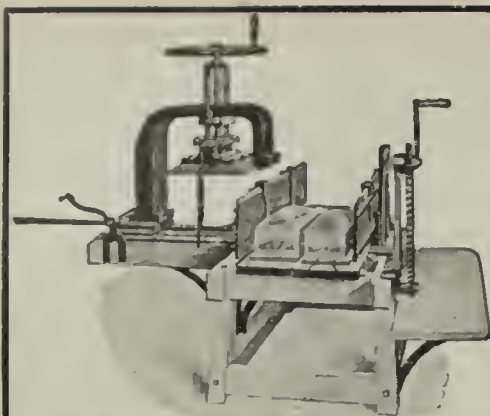
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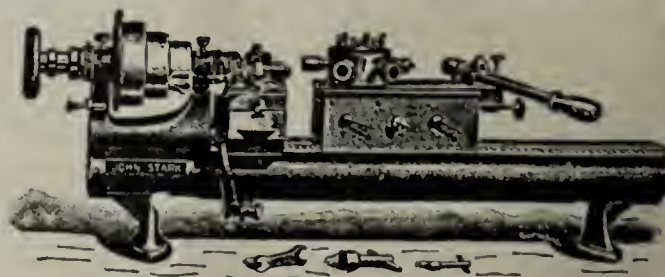
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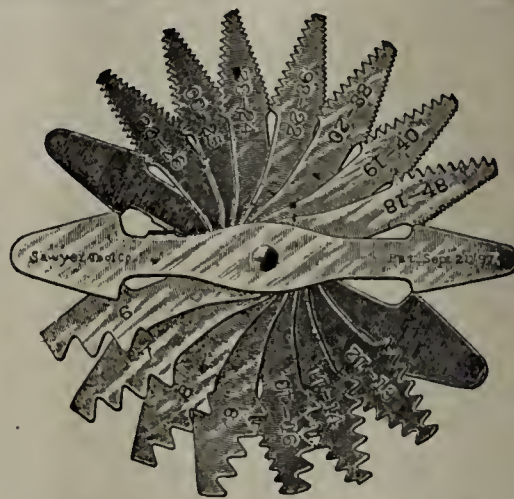


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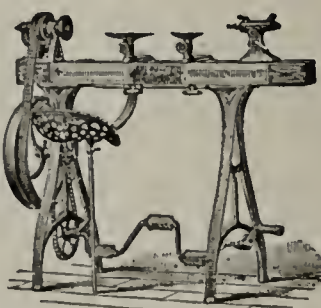
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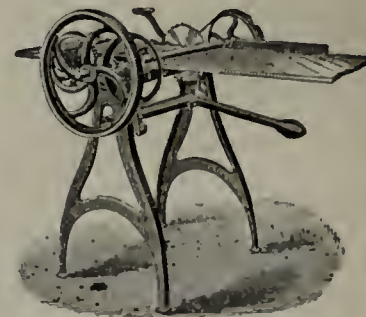
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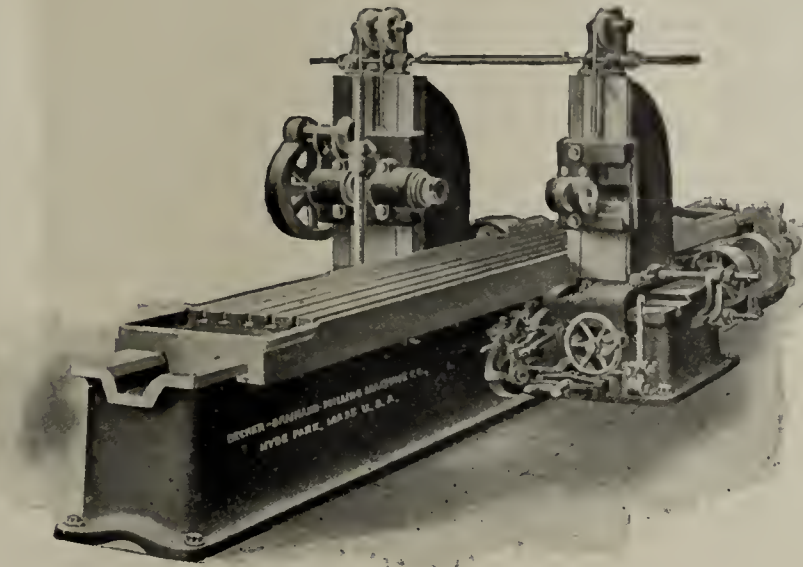


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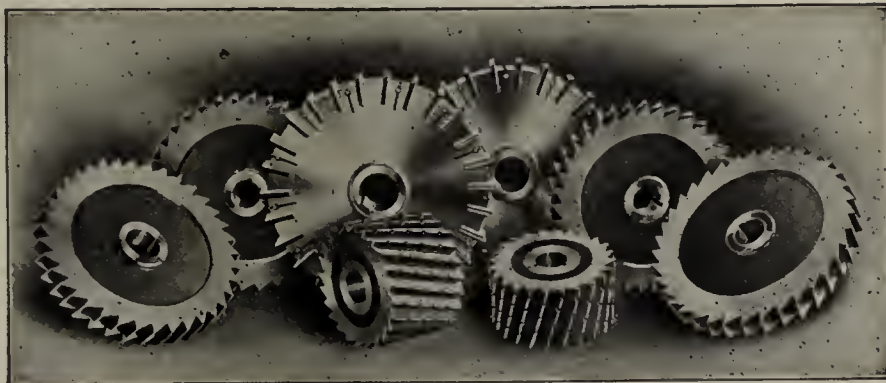
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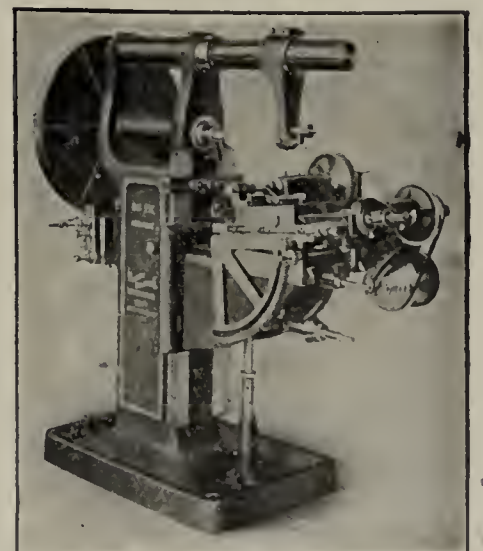
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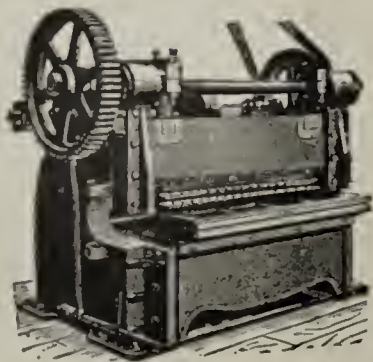


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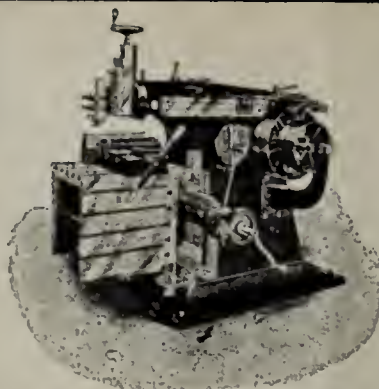
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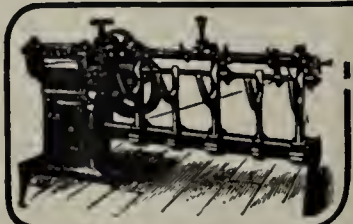
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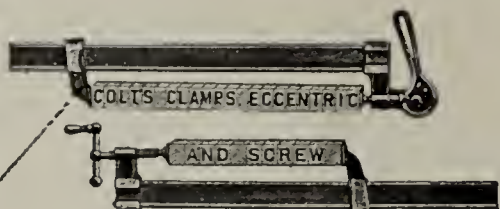
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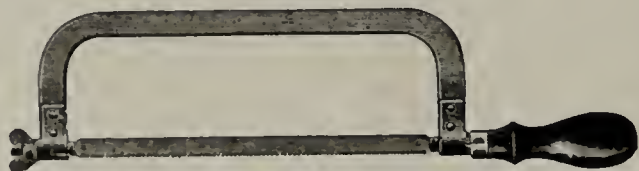
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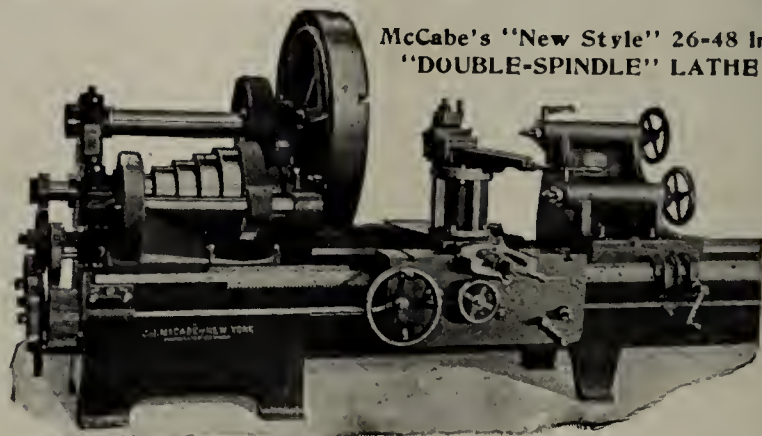


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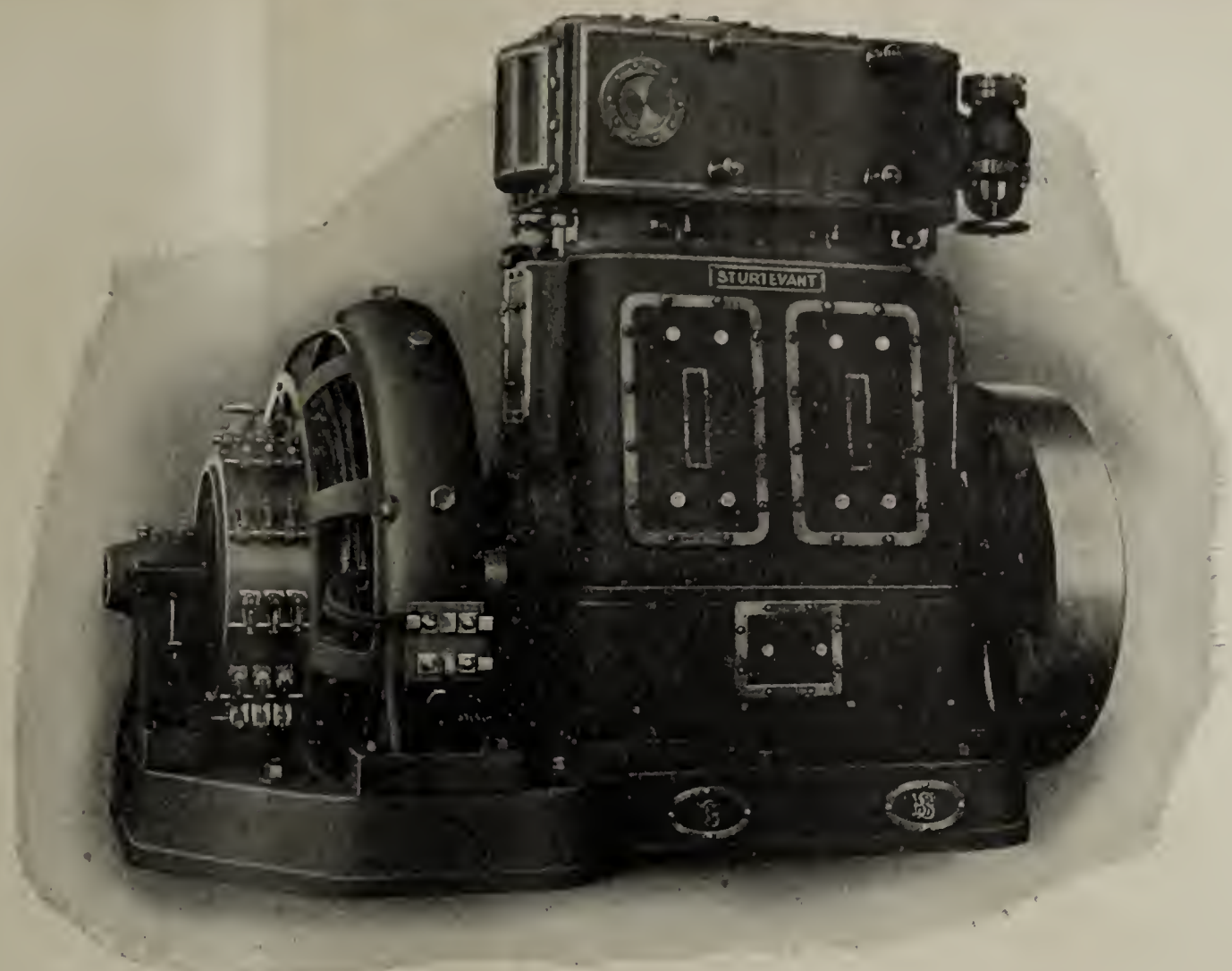
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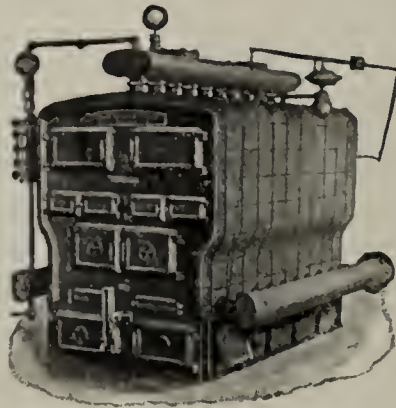
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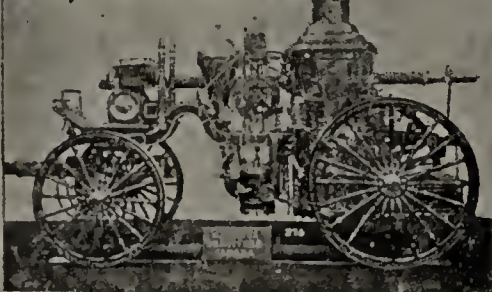
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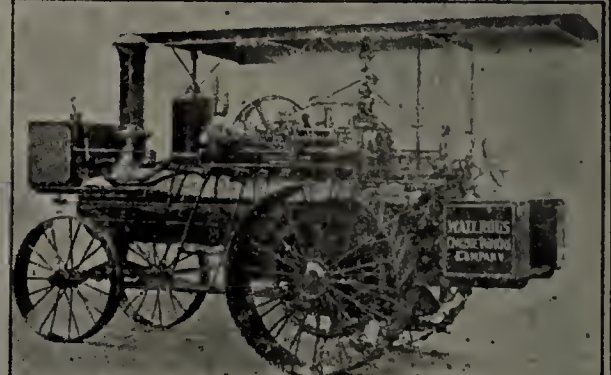
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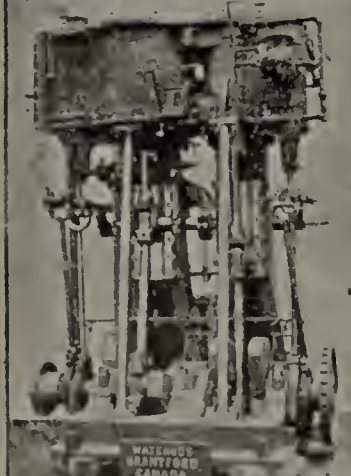


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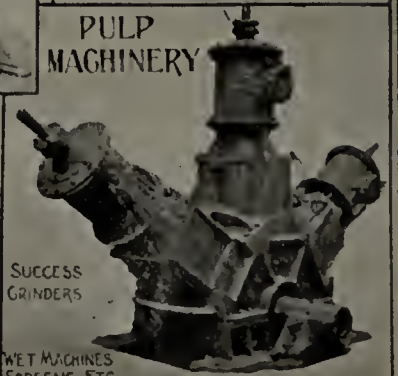
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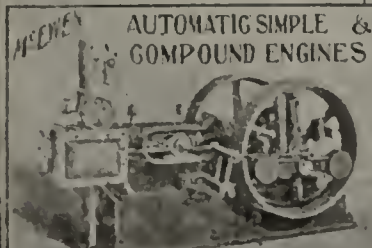


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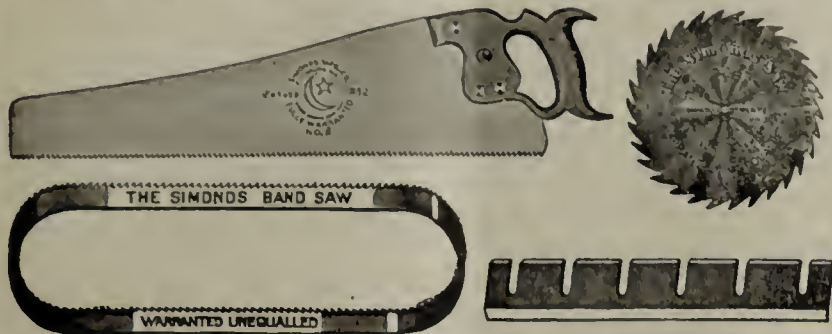
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ENGINE WORKS COMPANY LIMITED.

Brantford, Canada.

Simonds Saws and Knives

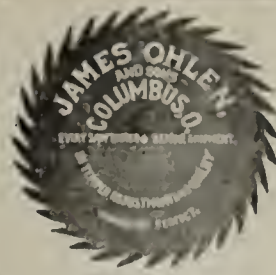
were awarded the Grand Prix and Gold Medal at the Universal International Exposition of Paris, 1900. All competition eclipsed.



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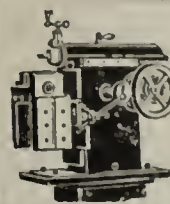
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HAND, CROSS-CUT OR BAND,
and want it to arrive on a certain steamer, write or cable the
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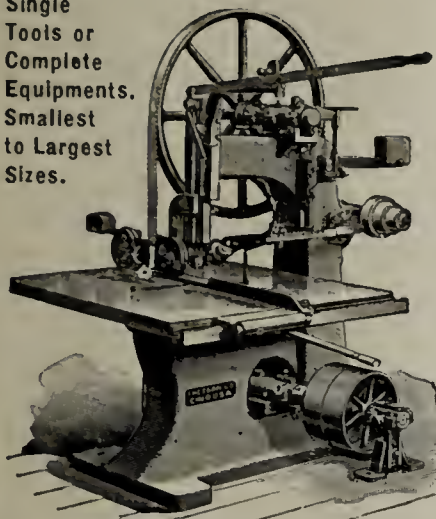
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And as the judge of this trial is the user, we'll convince you through him. Convince you that if you have lumber to rip on a small or large scale you are not meeting with the success of your competitor who uses our Band Rip Saws; and that if you are stinking on by the skin of your teeth and don't know what decent profits are, it's because you're not using the best tools.

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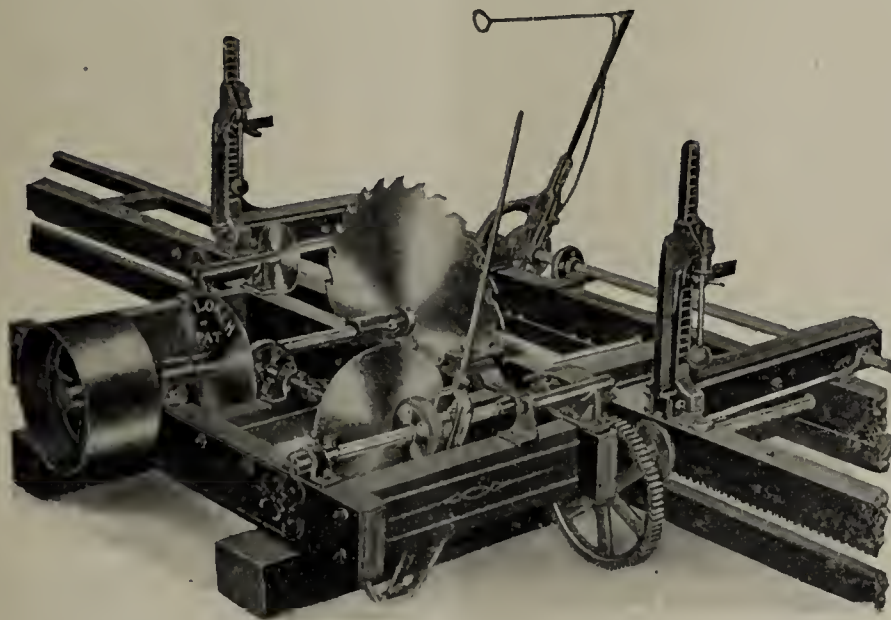
3. Concerning **Safety**, your competitor says: "We are pleased to state that the Band Rip Saw is the best machine for the purpose we have ever seen. It can be operated with ABSOLUTE SAFETY, hence it GIVES THE OPERATOR CONFIDENCE, and thereby gives an increased output."

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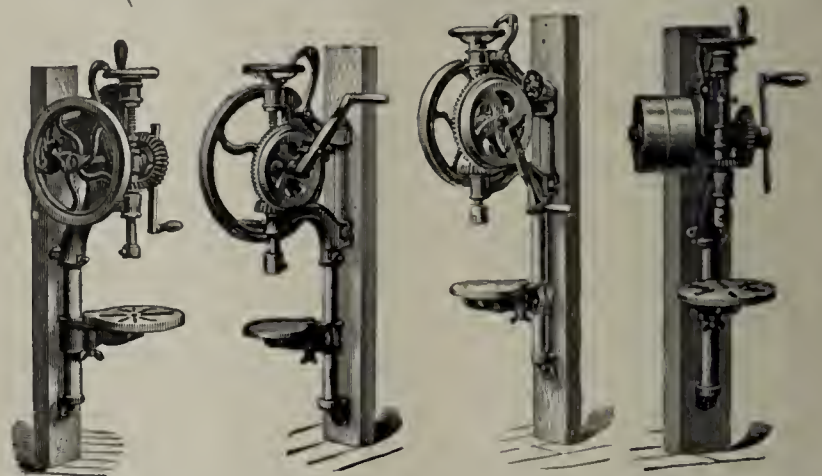


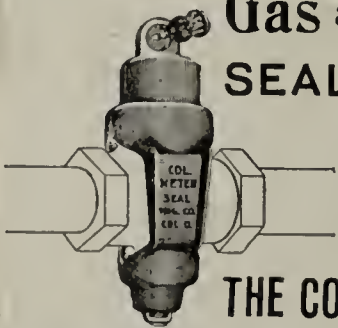
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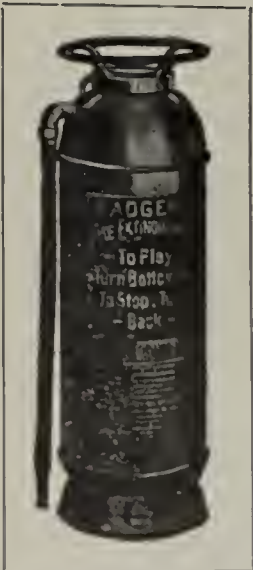


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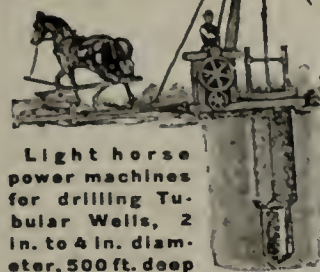
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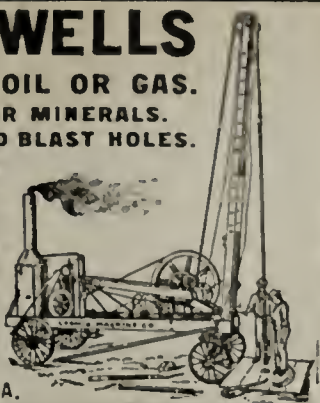
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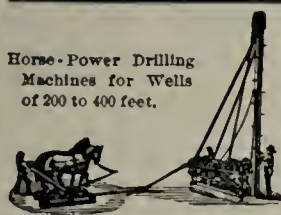
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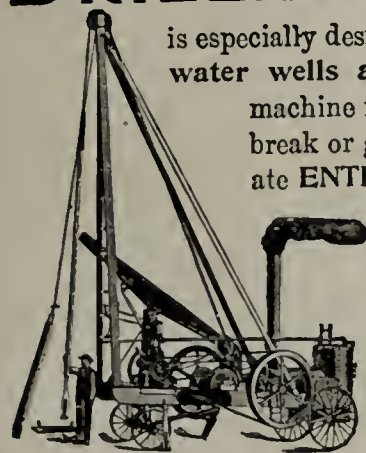
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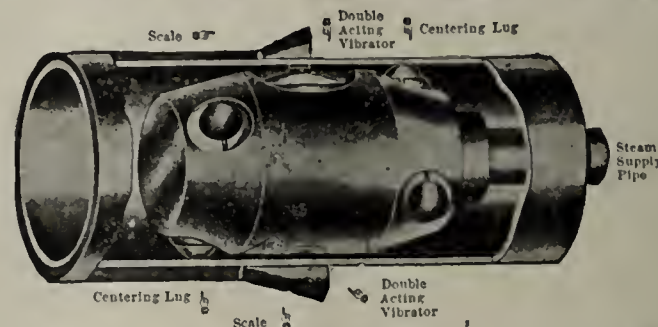
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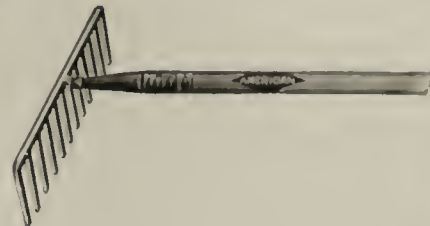
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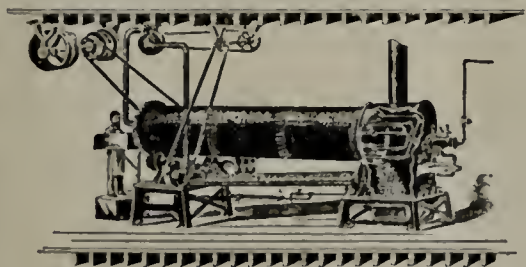
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Of highest daily drying capacity. Economizes both labor and space. Guaranteed to give satisfactory results.

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Strongest Barrow Made.



Notice the one continuous frame includes
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Anti-Corrosive 1st Coat Iron Bottom Paint, Anti-Fouling 2d Coat.
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**"New Jersey" Copper Paint
LEADS THEM ALL**

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We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

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NEW JERSEY YACHT RED COPPER
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NEW JERSEY SEAM PAINT
A Perfect Substitute for Pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,
JERSEY CITY, N. J. U. S. A.

Remarkable Fact

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shay."



A Paint That Protects

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents
boring of worms and all marine growth.

Awarded Eight Highest
Medals:
Gold, Silver and
Bronze.



Excels on Every
Point.
Cheapest to Use in
the End.

TESTIMONIAL. NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-TWO YEARS
RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

Manufactured Only by **TARR & WONSON, Limited,**
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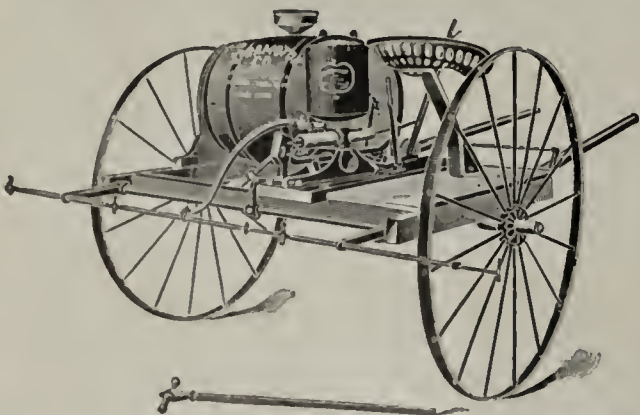
THE HORSE-POWER SPRAMOTOR.

FIG. 62.

Horse-Power Spramotor sprays potatoes from above and below at the same time. Can be worked by hand for stationary work if desired. Capacity, 12 nozzles at work. Prices on application.

WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR.

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NOTE.—The prices quoted, U. S. gold or its equivalent, are for Export only, include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

The Fig. 63 Horse-Power Spramotor is intended for the spraying of fruit trees for insects and scab; potatoes to prevent blight and insects; vineyards; the destruction of weeds and for the painting and whitewashing of buildings. Has automatic agitator, hardwood frame and is a first-class equipment throughout. Price, complete, boxed, weight, packed, 550 lbs., f. o. b. New York, \$75.00.

Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65½ pounds. All appliances, as shown, are packed within the barrel; 24x24x31 inches. Price, complete, \$15.00.

Spramotor No. 1, price per dozen.....\$166.32

These machines will apply any kind of COLD WATER or OIL PAINT.

SPRAPAIN, a Paint in DRY-POWDER FORM, only requiring the addition of cold water for instant use. Specify "Spramotor" and "Sprapaint" when ordering.
For INTERIOR use (white), in 400-pound barrels, price per ton, \$60.00.
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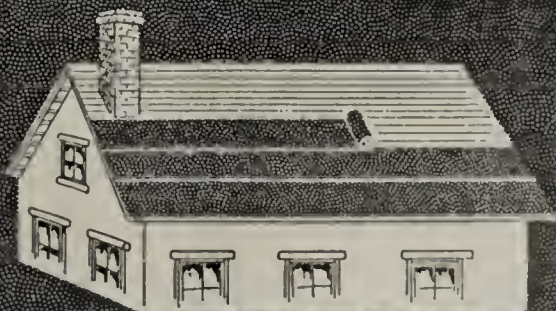
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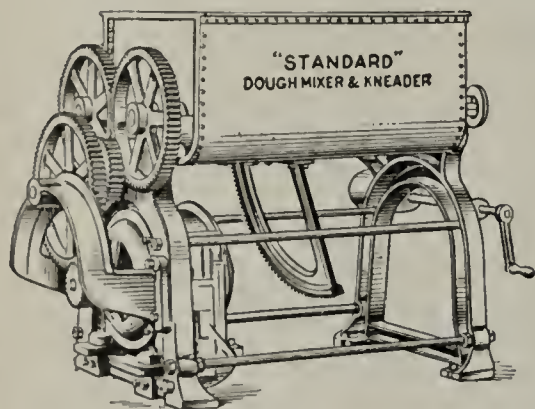
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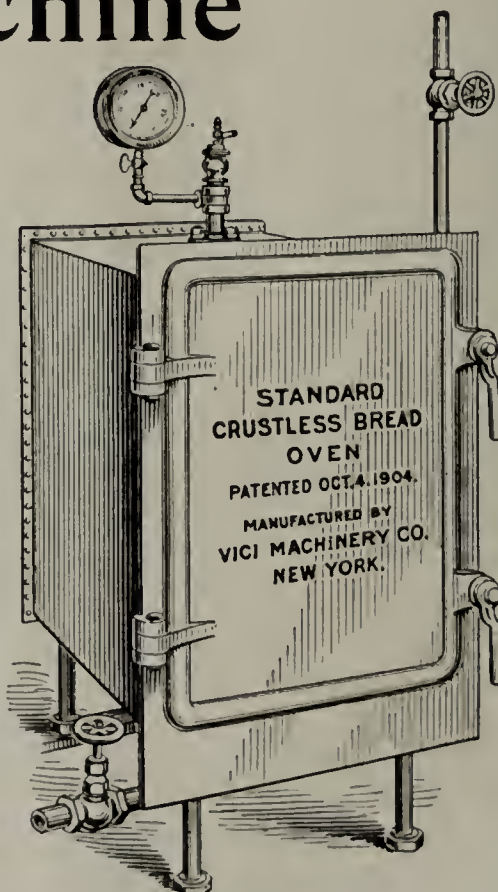
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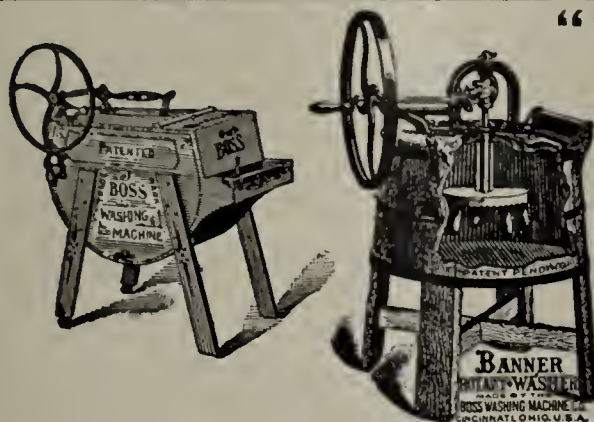
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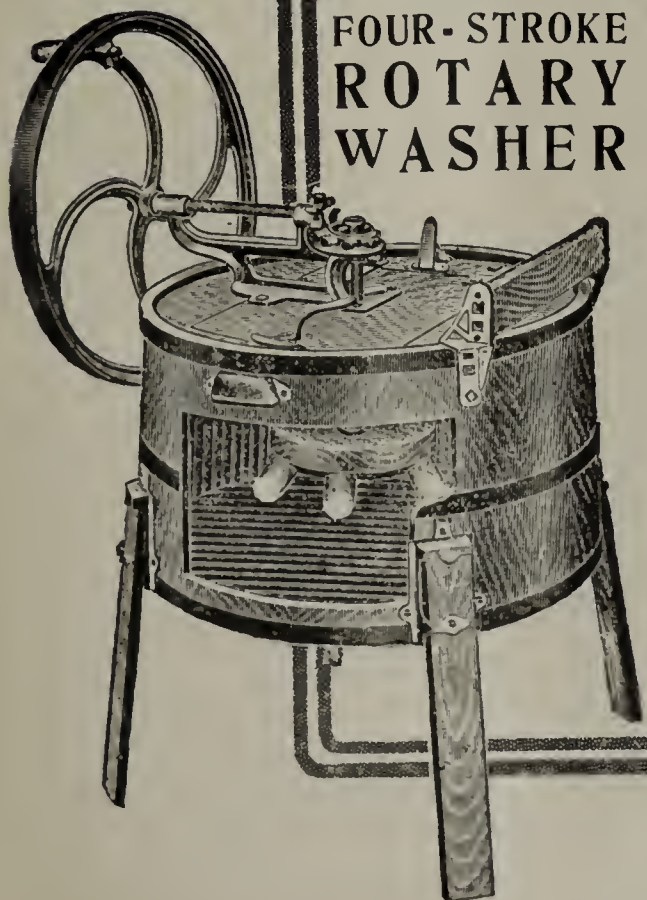
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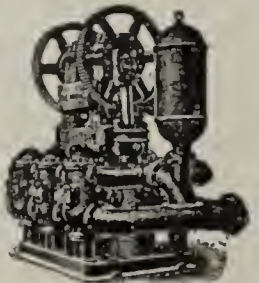
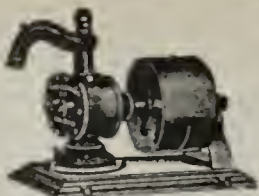
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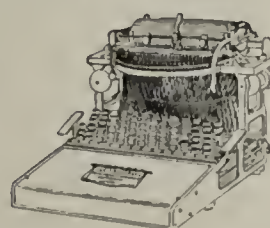
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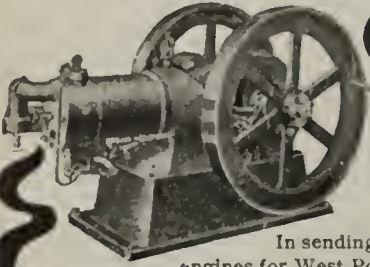
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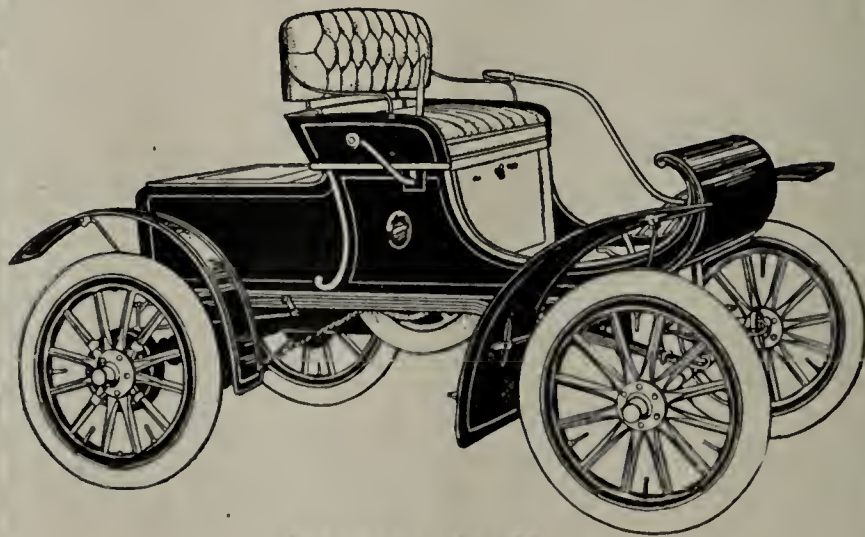
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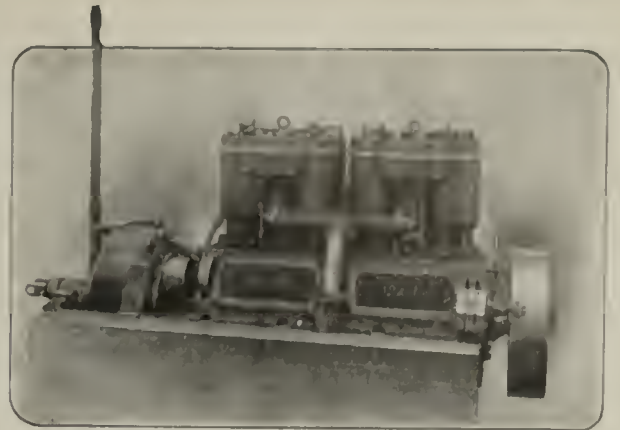
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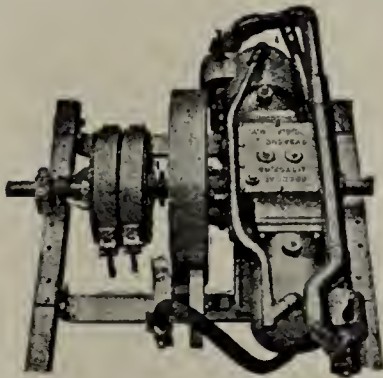
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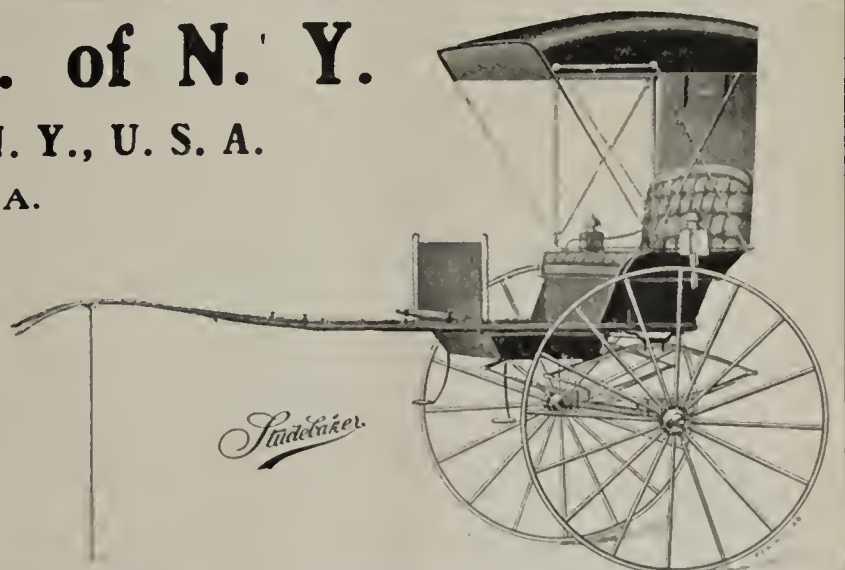
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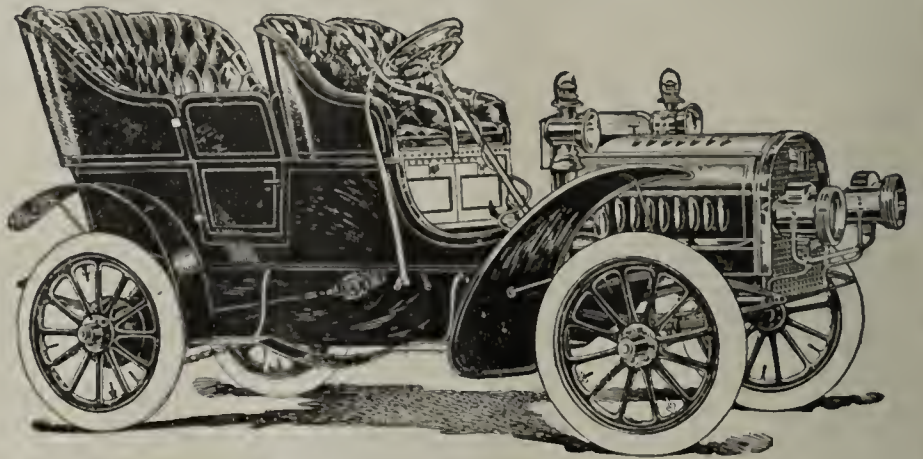
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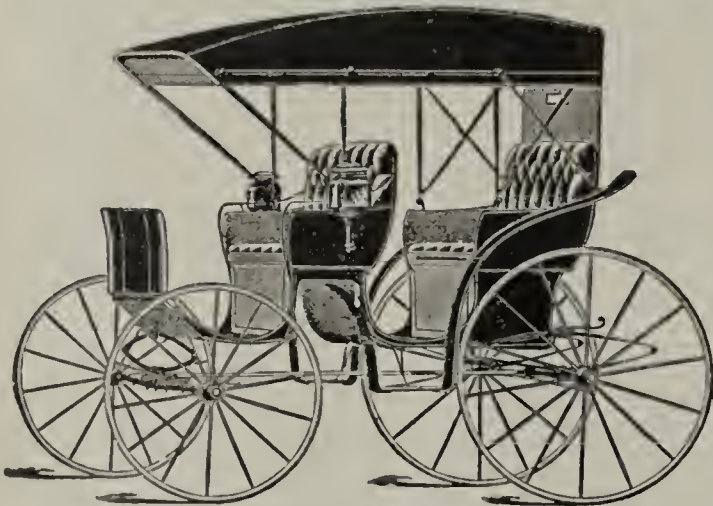
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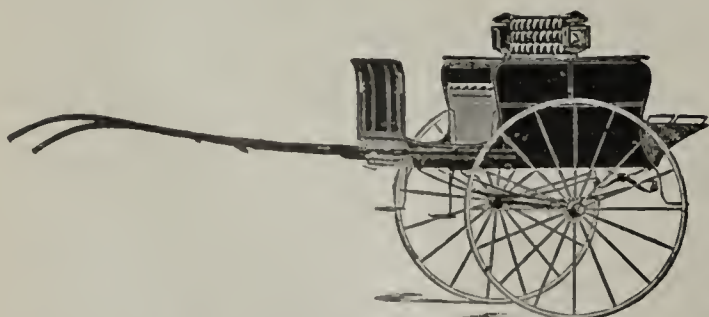
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Vol. LVI.

NEW YORK, JULY 1, 1905.

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Secretary Taft's Tour of the Far East.

During the present month, Secretary of War Taft, accompanied by a party of distinguished men, begins a tour of the Orient which is likely to prove of extreme importance to the commercial interests of the United States, as well as to the immediate welfare of the Philippine Islands. Mr. W. J. Johnston, publisher of the AMERICAN EXPORTER, is included in the party, being the only representative of an export publication. The foreign tours by members of the EXPORTER's staff have the strong indorsement of Government officials.

Death of Secretary of State Hay.

Practically the entire world joins with the United States in grief over the loss of Hon. John Hay, Secretary of State, regarded as one of the foremost diplomats of his generation. Although the greater part of his life was spent in public service, no taint of dishonor ever attached itself to his personal or official character. Disdaining the traditional methods which have made the term "diplomacy" almost a synonym for unctuous insincerity, Secretary Hay's honest and straightforward manner in dealing with affairs of state won for him the universal esteem of the foreign legations at Washington.

News of his death has been received in the Far East with particular regret, since it is recognized that it was through his efforts more than those of any other one man that the integrity of the Chinese Empire has been preserved.

President Roosevelt has succeeded in inducing Mr. Elihu Root, who was formerly Secretary of War, to fill the vacant post. The selection of Mr. Root meets the unqualified approval of the nation.

Immensity of American Business Interests.

The United States Government is finding the greatest difficulty in retaining cabinet officers and other high officials in its permanent service, notwithstanding the handsome salaries which they receive. The selection of a new officer to occupy a conspicuous post in the Government service naturally attracts to him the attention of the great corporate interests of America, who are always on the outlook for men of extraordinary ability.

In our last issue, mention was made of the fact that recently Hon. Paul F. Morton, Secretary of the Navy, resigned his position to accept the management of a large street railway and other interests in New York City. Close upon this incident follows the resignation of Mr. John F. Wallace as Chief Engineer of the Isthmian Canal and General Manager of the Panama Railroad. Mr. Wallace had not been two weeks on the field when he was tendered the management of a large New York corporation, with an annual income of not less than \$60,000. Since the Panama position carried with it a salary of but \$25,000 and involved residence in an uncongenial climate, he decided to accept the more attractive offer. His successor is Mr. John F. Stevens, the engineer in charge of railway construction in the Philippines.

Where manufacturers in other countries confounded strength and clumsiness, our clever friends across the Atlantic set themselves to preserve the strength while securing enhanced appearance. Some days ago, while passing through a large warehouse in Belfast, Ireland, the writer noticed metal trucks of improved design, with deep sides. On asking why these were being used instead of the ordinary wooden types, the principal remarked: "Oh, I secured these from America; they are much lighter and stronger, and in the end far cheaper than those of wood or having rails." In recent years there has been a large demand among retailers and dealers in every branch of business for till registers, calculators and purchase-noting appliances; and it is worthy of remark that American manufacturers have invariably been the first to recognize public requirements. In cutlery and iron and steel manufactures generally, the position of American manufacturers in foreign markets is very strong. Indeed, when one considers the enormous output of pig iron alone which it produces, it is easily understood how the world's bridges, locomotives, windmills and other machinery are all being supplied, directly and indirectly, by the United States. Owing to the enormous amount of raw material at hand and its unlimited supply of cheap fuel, it is notorious that no country in the world can execute orders with similar despatch. This has been proven to the chagrin of our own manufacturers in the recent development in South Africa since the Boer war.

The British shipbuilding industry depends to a great extent on steel imported from America, and when contracts are to be executed within a short period of time, the order invariably goes across the Atlantic. Besides this, having a large output, it is no unusual thing to find ten shillings a ton difference in price in favor of American quotations. The demand for improvement in method and design is becoming universal, and it may be safely said that if American manufacturers and merchants keep up to their past record for alertness, despatch and first-class work, then the commercial standing of that country as exporters is assured for all time.

AMERICAN TRADE SUPREMACY IN MEXICO.

Bulletins recently issued from the British Foreign Office show that in 1897 the United Kingdom controlled 19 per cent. of the Mexican import trade, while in 1903 the percentage dropped to 14½. The same reports announce that the export trade of the United States with Mexico has advanced from 49 per cent. in 1897 to 53½ per cent. in 1903. These figures have caused both surprise and alarm throughout commercial England, for British merchants now realize that the United States is gradually obtaining a supremacy in Mexico which cannot be broken.

There is every reason to expect a similar advance in the near future with respect to the Central and South American countries. The same geographical advantage obtains; the Panama canal and railway constitute the first step in the improvement of transportation facilities, and a rapidly increasing interest is being taken by our manufacturers in the needs of these growing republics to the South. In view of the superiority of American products and the further fact that the United States buys from South America much more than it sells, there is every reason why the Latin-American republics should do the greater part of their trading in the markets of the United States.

AMERICAN MACHINERY IN SIBERIA.

The strong demand in western Siberia for American machinery, particularly agricultural implements, is commented on in a report just issued by Mr. H. Cooke, a special commissioner sent by England to this section of the Czar's domains.

Mr. Cooke made the trip for the purpose of studying trade possibilities in western Siberia, which, owing to its many resources, has been called "Russia's Land of Promise." In traveling through the newly settled country, the English official found it highly fertile and inhabited by an industrious class of farmers. These people were almost unanimous in expressing their preference for American agricultural implements, although they traded to some extent with German and Danish dealers. Here is what Mr. Cooke reports as to the thrift of the farming folk of western Siberia and their partiality toward American goods:

"These rich regions will be to Russia's increasing millions what our colonies are to the British Isles. They will harbor her surplus populations. Even now Russian immigrants into Siberia, peasants though they be, are supplying the London market with butter, and, as they reap their crops with American harvesters, discuss with intelligence the rival preferences of machines from Milwaukee or Chicago."

The great railway, of course, has been responsible for the change that has come over Siberia. Mr. Cooke says the spirit of change has enveloped all the conditions of trade in the regions touched by the railroad and the huge waterways in connection with it. The old conditions, due to stagnation and isolation from the centers of Russian industry, are gradually passing away, so far as the main and accessible centers are concerned, and Siberia is becoming more and more a conjoint portion of the Russian trading system. Although the railway has dispelled much of their former exclusive influence, the power of the larger Siberian firms is still considerable. The smaller retail establishments can now order from Moscow, or even from abroad, either direct or through the numerous agents, travelers and representatives who scour the land. Central Russian makers are themselves directly invading the Siberian market and releasing themselves from their former dependence on the traditional trade methods of the country. The entire horizon of trade has thus been widened.

Russian firms are starting branches in Siberia or founding independent enterprises. The Danes and the Americans have already worked wonders in two branches of the agricultural conditions of the country.

To Russia the meadows and mines of Siberia, with their riches and resources, correspond to colonial possessions of Great Britain, Germany and France, which relieve the surplus population of those countries. The immigration movement, facilitated in every way by liberal grants, is answering the purposes of its initiators, both as regards quantity and results achieved. But even at this point Russia has not halted in her efforts to build up her "land of promise." She has given every other nation an equal footing, so far as trade possibilities are concerned. On that equal footing American machinery has gained the greatest headway among the people. Mr. Cooke explains this by freely admitting that the American dealers underbid their British competitors. Moreover, American goods are just as suitable as those for which higher prices are charged. It is universally conceded, except by rival manufacturers, that agricultural implements not merely designed in the United States, but made by American workmen out of American steel, are the best for any farming country.

JAPAN'S PARTIALITY TO AMERICAN MACHINERY.

By S. Uchida,

Japanese Consul-General in New York.

Every year Japan is showing more and more partiality toward American products, as statistics clearly prove. Figures compiled by the United States Department of Commerce and Labor from a statement issued by the Department of Finance of Japan, show that in the year 1884 the value of exports from the United States to Japan amounted to only \$2,163,000; in 1904, however, the value of these exports was \$28,942,000, an increase of more than \$26,000,000.

What is the reason for this? First of all, it is an indication that the Japanese appreciate the superior quality of American products and manufactures. Secondly, it is a proof of the very friendly relations existing between the two countries. But I should say, above all things, that Japan is buying more and more every year from America, because she feels that she gets full value for what she purchases. America's goods lead the world in quality and cheapness, on account of the skilled labor employed and the richness of its resources. They are just exactly what we want in Japan, and that is why we buy all we can from the United States.

The chief products which Japan gets from America are railroad materials, machinery, raw cotton and oil. American machinery is unquestionably the best in the world. We are using it in many of our industrial lines, and our mills, which are rapidly springing up on all sides, are equipped with machinery from the United States.

Effect of the War on Japan's Industries.

Our railroads have already bought a great many locomotives and steel rails from America, and in the future an even greater demand for all classes of its machinery may be expected. Conditions existing in Japan at the present time are, of course, not favorable to all lines of industrial development, but some benefit greatly by them. During hostilities, many public works have been suspended, but the war has not affected our cotton industries, except to create a greater demand for manufactured goods. We have many women working in our cotton mills, and it is needless to dwell upon the spirit of patriotism that prompts them to labor thus.

Now that the war is practically ended, there will be a great development of all industries in Japan. Machinery of every description will be needed, and the greater part of that machinery will come from the United States. At the present time there are four principal railway systems in Japan—that of the Japan Railroad Company, the San-Yo Railroad, the Kiu-Sho Railroad and the railway system owned by the Government, which comprises about 5,000 miles. All of these and Japan's harbors and highways, as well, are to be greatly improved, and large orders for American cars, locomotives and other machinery have already been placed.

A great many statements have been made as to what Japan's policy will probably be after the war is over, and this is a

question which seems to give anxiety to all of the world powers. I can say without contradiction that when the war is over the markets of Manchuria will be thrown open to merchants of every country. Japan is a nation supremely proud of her honor. Before the present clash with Russia, the Japanese government announced that it stood for the "open door" in Manchuria. The government still stands by that policy. Japan never goes back upon a declaration or a promise; we have always said that we favor the "open door," and we will not swerve from that position.

No Sentiment in Nippon's Policy.

In discussing the question, I am reminded of the many indiscreet utterances that have been made concerning a so-called "yellow peril" in the event of a Japanese triumph. Such statements are beneath the notice of any educated man. This talk of a "yellow peril" is absurd. Japan, in her commercial dealings, recognizes no race, creed or color. It is in every sense a commercial nation. It tries to produce the best products, and in buying looks for the best. That is why we buy so largely from the United States. There is no sentiment in its policy. At the present time the commercial relations existing between Japan and America are of the friendliest character. I think, however, that there is strong need of a reciprocity treaty between the two nations, but this can be arranged later on.

Japan, in her wonderful development during the last few years, has gone side by side with the United States. She has always looked upon America as a friend, and has never been disappointed. During 1904, Japan shipped to the United States goods valued at 101,000,000 yen, or over \$50,000,000. Her total commerce with America was 159,000,000 yen. Japan ships an enormous quantity of raw silk to America. In this country it is converted into finished products, and some of it again exported. Our country supplies America with more than 50 per cent. of

its tea. We like to trade with America because we are always sure of getting satisfaction. When we send to the United States for goods, we know that the orders will be promptly executed, the goods manufactured in the shortest possible time and shipped to us immediately. When we want anything urgently and promptly, we send to America for it.

Japan and America should always be warm friends. Our commercial interests in the Far East are identical.



MR. S. UCHIDA,
Japanese Consul-General, New York.

Unique Cars for South Africa.—The J. G. Brill Company, of Philadelphia, recently sent a shipment of cars to Cape Town which have some unique features. Although they are only 15 feet long overall, the vehicles have three compartments. The largest one is for first-class passengers, of which it will accommodate seven. A smaller compartment at the other end is for the third class, with seats for four persons. The remaining division is for baggage, and the floor space measures 3 by 6½ feet. The design of car is of the company's semi-convertible type.



AN AMERICAN BINDER IN OPERATION ON AN AFRICAN FARM.

AMERICAN HAYING AND REAPING MACHINERY.

By Wm. F. Tynan.

While American products are highly appreciated by progressive persons of all countries, to no class of goods does this apply with more force than to agricultural machines and implements. It is generally conceded that American models lead the rest of the world in simplicity, strength, handiness of operation and easy running qualities. As a result, they sell on sight; consequently, in addition to supplying the enormous demand of its farmers, America annually exports many thousands of these machines and implements, and the quantity thus exported increases yearly. An important branch of this industry is the manufacture of haying and harvesting machines, to which this particular article is devoted.

The amount of time and labor saved by these machines is almost beyond comprehension. From the drudgery and toil of years ago, the work of the farmer has been gradually raised, until to-day he can do many times the amount of work with less labor. Without them, it would not be possible for America to conduct farming operations on the present scale.

While the machines described and illustrated in this article refer to the designs of a single manufacturer, a representative American concern that has supplied foreign countries for years, the remarks apply in a general way to other kinds of agricultural machinery.

No farmer with any considerable quantity of grass to cut can afford to get along without a mowing machine; hence, it is one of the most extensively used of farm implements. It was



A MOWER WHICH HAS BEEN IN USE FOR FORTY YEARS.

one of the earliest machines put on the market, and has probably reached a higher point of perfection than its companions. The present models are built almost entirely of steel, steel tubing which best combines strength and lightness being used in those parts of the frame

receiving the severest strain. Roller and ball bearings are employed to eliminate friction. The cutting apparatus is given special care and attention, as this is the vital spot of a mower; the result is that the grass is cut almost

as cleanly as a razor shaves. Conveniently located levers bring the entire machine under control of the driver; with one, the cutter-bar can be tilted up or down, while another raises the entire bar from the ground for turning corners or passing stones or stumps. These machines are made in a variety of sizes, from three foot cut to eight foot, and in some cases more.

After the mower has done its work of cutting the grass, the tedder steps in and carries on the operation. Its task is to toss and separate the hay, thus hastening the curing process so that it can be raked the same day it is cut. The commercial value of hay thus treated is much greater on account of the retention of its natural color; the sun does not get a chance to bleach it, as happened previous to the introduction of this supplementary machine. The tedder is built entirely of steel, and is characterized by strength and simplicity. The motive power is transmitted to the fork arm shaft by a sprocket chain connecting with the axle. No two of the forks move together; the result is a motion that catches every wisp of hay and completely separates it from the mass. One trip of a tedder around the hay-field will do the work better than it ever could be done by hand. The simplicity of this machine permits it to be operated by a boy or girl to as good advantage as by a strong man. Strong springs absorb all jars and vibrations; handy levers are made use of to throw the machine in and out of gear, to regulate the height of the forks from the ground, etc. Though small, the tedder saves its cost many times over and will eventually be in use on every farm.

The final operation before loading, that of collecting the cured hay in piles to be quickly gathered up, is done in "jig-time" by the hay rake. As with the tedder, this machine can be operated by youthful hands on account of the simplicity of its construction. There is nothing to be done except to guide the horse and regulate the dumping device, which is done by a touch of the hand or foot. With these machines raking a windrow of from eight to twelve feet in width, the time consumed in cleaning up a large field is short indeed. Its all-steel con-



AN AMERICAN HAY-RAKE IN AN ENGLISH FIELD.

struction, crucible steel coiled-spring teeth, wheels with easily renewed hubs, and handy dumping device, place the rake on the same plane of perfection as its companion machines. Without any additional exertion, the hay can be left in such a manner as to be easily loaded. There is also another machine,



AN AMERICAN REAPER ON A
BOHEMIAN FARM.

the hay loader, which, when attached to the rear of the wagon, loads the hay thereon as fast as the horses can walk. In fact, with this complete outfit of haying machines, all hand work is practically done away with.

Aside from the ease and comfort with which the work may be done, there is the consideration of time, money and horses saved, and in many instances the entire crop.

To harvest the vast grain crop of the world in the shortest possible time, American makers annually produce thousands and thousands of harvesting machines, the principal ones being the self-binding harvester and the reaper. The binder is indeed a wonderful piece of machinery. Many years have been consumed in bringing it to its present degree of perfection. The first machines put on the market, although at the time considered a wonder, were crude indeed when compared with the latest models of the present day. It is remarkable how much it accomplishes without

any assistance whatever; all the driver has to do is to drive his team and handle convenient levers. The reel draws the grain, whether long, tangled or short, to the knife; it is cut and then elevated to the binding apparatus, where the neatest possible bundles are made and tied with



AN AMERICAN BINDER DOING
HEAVY WORK IN ENGLAND.

strong twine. These bundles are deposited in a carrier, which dumps itself when four or five bundles have been placed in it. The binder will continue doing this work throughout the season. Its only appetite is for oil. How many helpers would be needed to accomplish the same results in the same length of time? It is an inspiring sight to see a long line of these machines eating their way into a vast stretch of grain, the neatly tied bundles coming out of the opposite side of the machine with clock-like precision. As the binder is one of the largest machines of its class, great skill must be exercised in its construction, in order that it may be sufficiently strong and yet be easily drawn by the team. Here again steel construction, roller bearings, and other mechanical perfections are made use of.

Although there is nothing that can compare with the binder, there are many who for one reason or another do not feel justified in investing the necessary amount; to meet the demands of this class the reaper is intended. This does the work of the binder up to the point of tying the bundles. Instead



AN AMERICAN MOWER AT WORK IN GREAT BRITAIN.

of doing this, the grain is raked off the platform and left in gavels which can easily be tied into bundles by hand. By means of a convenient lever, the driver can regulate the amount of grain that accumulates on the platform before being raked off.

Modern improvements on American-made agricultural machines and implements are too numerous even to mention; in fact, they are the leaders of the world in this respect. An experience of many years is behind them, and their development has reached such a state of perfection that they run as smoothly as a watch, and can be controlled and regulated by the operator from his seat.

Although the vast agricultural area of their own country presents an almost unending variety of conditions which have to be suited, American manufacturers spend a large amount of time and money to ascertain the requirements of their foreign customers, and to keep pace with them; hence, the machines that are sent to any particular country are adapted in every respect to that country, its peculiarities of soil, etc., and can be relied upon to do the work. Most all of these concerns have a special department of their office force whose sole work is that of attending to foreign correspondence, orders, inquiries, etc. Promptness is their business policy; once an order or inquiry is received from abroad, there is no let-up until it has had complete attention; they all have connections in the export cities and enjoy the advantages of rapid transportation. Attractive printed matter, which gives a very distinct idea, both by type and picture, of the machines described, is issued and sent in answer to all inquiries. Consumers who use American machines and implements will get the best results with the least trouble. The merchants who sell them will get the cream of the trade in their locality, and will be looked upon as the leaders in their line. It is to the best interests of both to get in touch with American manufacturers and products.



BINDERS IN AN AMERICAN WHEAT FIELD.

SPECIAL AGENTS OF THE BUREAU OF MANUFACTURES.

The Congress of the United States, at its last session, authorized the Secretary of the Department of Commerce and Labor to expend a generous sum in the interests of American manufacturers. This has enabled Secretary Metcalf to organize a Bureau of Manufactures and to select a number of experts to visit the chief commercial centers of the world in the interest of American export trade.

While, of course, these representatives will not be permitted to represent the interests of any individual house or any particular line of goods, or even to give specific information where such products may be bought to advantage, they will undoubtedly accomplish a great deal in the desired direction. Although appointed by Secretary Metcalf, their work will be under the immediate supervision of the Bureau of Manufactures. The practical information gathered by them will be transmitted to the Secretary of the Department of Commerce and Labor, and by him to Congress at the next session. It is expected that the direct results will be of such manifest importance that Congress will at once authorize the continuance of this work on an enlarged scale.

In selecting these special agents, Secretary Metcalf has exercised particular care. Realizing the importance of their mission, he has chosen men from whom he has good reason to expect the maximum results. The following is a list of those who have been designated, with the countries which they will visit:

Prof. Lincoln Hutchinson, of California, will make a tour of the chief commercial cities of South America. He is a professor in the University of California, an authority on economic subjects, and has traveled much abroad, making a study of trade conditions. Professor Hutchinson is an accomplished linguist, speaking all of the European languages.

Mr. Charles M. Pepper will visit Canada, Mexico and the Central American republics. Mr. Pepper is a well-known newspaper correspondent who has for several years past been connected with governmental investigations in South America. He was a member of the mission that went to Mexico and South America in connection with the transcontinental railroad; he has written much on commercial conditions in the countries which he will visit.

Mr. Edward Beldoe has been assigned to the West Indies and Venezuela, and to British, Dutch and French Guiana. He has traveled several times around the globe, and has written much relative to commercial relations. He was a consul in China for several years, and some of his reports on trade matters in that country are among the most interesting that have been received from the Orient.

To the Far East will be sent Mr. Harry R. Burrill and Mr. Raymond F. Crist, who will investigate commercial conditions in Japan, Korea and China. The last-named will be, in a certain sense, Secretary Metcalf's personal representative, since he is private secretary to the Secretary of the Department of Commerce and Labor.

He is a young man of considerable experience with public affairs; is mentally bright and alert, and exhibits great enthusiasm in the work before him.

Mr. Burrill is a trained newspaper man, who has had several years' experience in Washington as a correspondent. He is thoroughly versed in public affairs, has a large acquaintance with public men and is in every way well adapted for the duties to which he has been assigned.

In the May number of the *AMERICAN EXPORTER*, Mr. J. Hampton Moore outlined the general scope of the Bureau of Manufactures, of which he was then Chief. It is a section of the Department of Commerce and Labor, and will have particular connection with that important part of the American export trade, which is classified as manufactured products. While Secretary Metcalf will continue to give close personal attention to the promotion of foreign trade, as well as domestic, he will, of course, be able to serve the interests of our export trade more efficiently through the new Bureau which has been organized. It should be remembered that upon Secretary Metcalf devolve also the responsible duties of developing the mining, shipping and the fishery industries, of handling the great labor problem, with all its complications, and with the ever perplexing question of internal transportation. The Bureau of Manufactures is but one of thirteen similar offices under his immediate charge.

The sending forth of special commercial agents will not affect the existing work of the United States consular service, other than to increase its efficiency. This vast body of intelligent and efficient consuls, scattered throughout the chief cities of the world, will also be at the disposal of the Bureau of Manufactures. They will continue to make regular reports to the Chief of the Bureau, whose portrait we take pleasure in reproducing here-



MAJOR JOHN M. CARSON,
Chief of the Bureau of Manufactures.

with, and will assist him in every possible way to bring the American manufacturer and the foreign consumer in close contact.

Since the present issue of the AMERICAN EXPORTER will reach the great number of foreign import merchants in advance of the visit of the Government's special agents, it will interest our readers to know something of the work which they are expected to accomplish. To a representative of the editorial department, Major Carson has gladly given such information as is at present available with respect to the purpose in sending these men abroad. First of all, as a preliminary step, the Bureau of Manufactures placed itself in communication with the leading manufacturers of the United States, in order that it might understand exactly what these exporters desired to know with reference to the foreign markets. It is from the countries themselves, however, that the agents expect to obtain the greatest practical assistance in extending American export trade.

In a general way, their object is to learn the conditions of trade as they exist in the different countries which they visit. The industrial and commercial features will be thoroughly investigated, together with the tastes and habits of the people and the agricultural conditions in so far as they have a practical bearing on the exportation of goods from the United States. In those sections where European or other competitors hold the supremacy, efforts will be put forth to learn exactly the basis of such supremacy. They will be instructed to investigate the character and quality of clothing, for example, with a view to a possible introduction of American cotton goods. Since styles, colors and texture of clothing and other goods used by the people of the United States are not adapted to use in many foreign countries, the report of these agents will suggest changes which would bring increased favor to products of American manufacturers. Since America possesses the raw material, the factories, the fuel supply and the most skilful workmen, it would naturally appear to the interest of the foreign buyer if he could purchase such products from the United States direct, instead of from countries which must first obtain the raw material from America.

The mere fact that these agents are being sent forth shows that the United States is on the eve of a great commercial expansion. It is an indication that the manufacturers now intend to study the conditions obtaining in other lands; and any one familiar with American enterprise will be sure that when the conditions are learned, the manufacturers of the United States will be able to successfully compete with those of any other country. These representatives will bring back with them full information with reference to banking and credit systems, transportation facilities, styles of packing, and other requirements which are different from those of the United States. They will not undertake to influence the actual sale of American goods; their object is rather to make an intelligent study of all conditions affecting such sale, and to make a full and accurate report to the Department of Commerce and Labor. The Department will then transmit the information to Congress and, later, place it at the disposal of any who may desire it. Each manufacturer must then be his own salesman and meet existing competition in his own way.

Foreign importers who may have the opportunity of personal interviews with these agents will find it greatly to their advantage. Readers of the AMERICAN EXPORTER are requested

to assist them in all possible ways. The importer will thus be able to better understand the American point of view and will acquire a great deal of information with regard to the quality of American goods and the methods by which they are made and handled. Since personal contact between intelligent representatives of different countries is one of the most effective ways of promoting trade relations, it is to be hoped that many of our readers will have the opportunity of meeting these special agents, whose sole object is to serve the mutual interests of American exporters and foreign buyers.

JAPAN'S \$60,000,000 COMPLIMENT TO AMERICA.

Japanese officials have recently declared that their government looks upon the United States as one of its best friends, and now the truth of these statements is being shown. Very recently Japan sent a rush order to America for 1,000 steel-frame freight cars for the Imperial Railway Company. Shortly after this order had been placed, the Japanese minister, through a large banking-house which represents the Mikado's government in America, effected the distribution of \$60,000,000 among banks and trust companies in New York. This sum represents the greater part of the \$75,000,000 bond sale recently made to American investors. The depositing of this sum in American banks has great significance. Should Japan need to spend the \$60,000,000, or any part thereof, it will be spent in this country.

Recent events in the Straits of Korea have shown that the Japanese, as fighters, are fearless, shrewd and wise. The same qualities likewise predominate in their business instincts. What better compliment could have been paid to American industries and American business men than the action taken by the Mikado's government immediately upon the first indications of peace?

The smoke of battle had hardly begun to clear away from Asiatic waters when Japan began outlining its plans for the immediate future. With hostile warships no longer a menace, its commerce could be resumed. The rolling stock of the Japanese Imperial Railway had been greatly depleted by the necessity of transferring large numbers of freight cars to the newly acquired portions of the Manchuria railroad, now being operated by the Japanese; hence the necessity for others.

There arose no difficulty in their purchase, aside from that of selecting. England, Japan's ally, stood ready and eager to supply them. In fact, Japan had its choice of the world's markets. Without hesitation, an emergency order was sent to the United States, since the cars are needed at once, and American manufacturers are famous for promptness in filling such contracts. This order has been divided between three Pennsylvania firms. The cars are to be of the gondola pattern, with a 3½-foot gauge, and will be 7 feet 5½ inches wide, instead of 8 feet, as in the case of the standard-gauge car.

The American firms will unquestionably finish the cars with the greatest possible speed and thoroughness. They will cross the Pacific on a special American steamship and reach their destination in just the condition demanded. Japan will pay the price agreed upon from the \$60,000,000 deposited here. Then, when it is found that materials for new bridges, modern implements for tilling the soil, or any foreign goods are needed, the order will undoubtedly come to America. The deposit of the \$60,000,000 is one of the neatest compliments paid to America in a long time.

PRACTICAL FARM MECHANICS.

By Prof. C. J. Zintheo,

Chief of Bureau of Farm Machinery; U. S. Dept. of Agriculture.

The United States is the largest manufacturer, user and exporter of farm implements in the world. There is made and sold each year in the country \$100,000,000 worth of farm machinery; fully one-half of this goes into the hands of men who do not know how to select it wisely or to keep it in proper condition. The waste which results runs into millions of dollars annually. In addition, implement manufacturers lose large sums in making and attempting to introduce machinery unsuited to the

work it is intended to perform, with a resultant loss to both purchasers and manufacturers.

Realizing that there is a vast field open for investigational work in farm mechanics, the United States Department of Agriculture has created a new Bureau of Farm Machinery and Farm Building Investigations. The writer has been selected to take charge of this bureau, to which has been entrusted the responsible duty of investigation, together with the distribution of information on these



PROF. C. J. ZINTHEO,

Chief of the U. S. Bureau of Farm Machinery.

subjects. Numerous lines of experiments will be started by this new bureau. Since traction engines are coming into use for plowing purposes, exhaustive experiments with farm motors will be carried on to determine the cheapest form of motive power for this and other purposes and for operating pumps in irrigated districts. Tests will be made with various gasoline engines and the new gas producer gas engine to determine how cheaply power may be produced from lignite coal in the extensive lignite fields of North Dakota, and thus obtain a substitute for the expensive gasoline. Experiments will also be conducted with denaturized alcohol, produced from potatoes and waste products of the farms, to be used as a fuel for farm motors in Colorado and elsewhere. Cement and concrete for farm building purposes will be experimented with to determine their practical efficiency and cost, as compared with lumber, which is constantly increasing

in price. Tests are to be made with various farm implements to determine their draft and efficiency for certain kinds of work. A bulletin on corn harvesting machinery will be issued in the near future. Thus it may be seen that a very extensive field of investigation and information

will be established and a great deal of benefit will be derived by the implement manufacturer, by the American farmer and the foreign purchaser. Since these investigations will naturally lead to the perfection of existing types of machinery and to the designing of implements to meet special conditions, the export trade will



THE FARM MECHANICS BUILDING AT THE IOWA STATE COLLEGE, AMES, IA.

reap the practical results of this important branch of the Government's activity.

The work of the Bureau of Farm Machinery and Farm Building Investigations begins with the present month, and it is therefore too early to outline in detail the lines along which investigations are to be conducted. However, the following description of the course in farm mechanics at the Iowa State College, a course organized by the writer, will indicate in a general way the needs which are to be studied and met.

The required work for all agricultural students is divided into two semesters. In the first, the fall semester, field engineering is offered, while the spring semester is devoted to farm machinery. The work is divided into classroom work, consisting of lectures, and practical or laboratory work. The laboratory work is again divided into five divisions, viz., mechanical drawing, field

plotting and drainage engineering, carpentry, blacksmithing and farm machinery. The field engineering course consists in the use of leveling and transit instruments, surveying land, leveling for tile ditches and establishing drainage districts.



MAKING A DYNAMOMETER TEST OF A FARM WAGON.

The practical character of the instruction is shown in the following outline of field work: (1) Plotting and laying out the farm, arrangement of the fields for rotation of crops, mapping and plotting the fields. (2) The construction of country highways, such as dirt, gravel and macadam roads, with practice in the use of road machinery. (3) The location of the building site and arrangement of farm buildings, pastures, water supplies, garden plots, lawns, etc. (4) Fence construction, consisting in setting and testing wood and cement fence-posts, designing gates, operating fence-building machines, and testing fence-wires.

In the drawing-room, the students learn to use the drawing instruments and make maps, plan farm plots and farm buildings. They also sketch parts of farm machinery, reproduce them to scale, and make assembled drawings of machines.



ONE OF THE "TEXT BOOKS" USED BY FARM MECHANICS STUDENTS.

In the carpenter shop, the students receive training in such work as will aid them on the farm. They learn how to use tools and to keep them in order and have practice in making neck-yokes, whiffletrees, doors and windows, so that they may be prepared to do any of the repair work on the farm. In the blacksmith shop, they are taught to iron articles made in the wood shop, to make and temper tools, sharpen plow lathes, and do general farm blacksmithing. An advanced course in practical blacksmithing is also offered for students who wish to become proficient in horse-shoeing.

A complete course in the history, development, construction and operation of various farm implements is given, including the study of the elementary principles of mechanics, a study of dynamometers, equalizers, methods of computing speeds and sizes of pulleys and belts. The laboratory time is devoted to assembling, adjusting and testing various farm implements, such as binders, mowers, corn binders, huskers and shredders; corn planters and grain drills are calibrated to determine the accuracy of dropping the corn and the uniformity of sowing the grain. Grain separators and corn graders are also tested. A study is made of wagons, buggies and all styles of cultivators and harrows; the construction of different makes of machines are critically compared.

A comprehensive course in farm motors is given, and careful study made of the construction of traction engines, steam boilers, steam engines, valves, etc. Cylinders are set and balanced, and practice is given in the firing and cleaning of boilers and the operating of engines. Gasoline engines and their construction receive thorough study and practice is had in running different types of engines. Windmills are studied with a view to their construction and efficiency; experiments are carried on to determine the amount of power to be obtained from windmills with different velocities and densities of winds.

There are also offered courses in research work in farm mechanics, in which the students take up a systematic study of some implement, with the idea of improving its working ability or to learn just what results may be expected. Traction tests with wagons with different heights of wheels and different widths

Another course in farm architecture is offered, which embraces the planning of farm buildings, granaries, silos, machine sheds, and living houses. This includes their construction, cost and conveniences; a study of the different stalls, cribs, etc.; also tests of the strength of building material, cement, concrete and



FARM MECHANICS STUDENTS SETTING UP BINDERS.

building blocks. Complete plans and specifications, with price-lists of material, are made by the students. Ventilation and arrangements of windows for lighting the building are also investigated.

Thus it will be seen that the field in practical farm mechanics is quite broad. It is also quite an important field when we consider that next to the land itself, the machinery and buildings are the largest items of expense which the farmer has. In the farm machinery is also the largest chance for leakage or waste. A great quantity of farm implements goes into the scrap-pile years before it should, merely for want of care and attention. It is often a simple matter to repair a farm implement, and the intelligent farmer who has taken a course in farm mechanics can repair his own machines with little expense, instead of going several miles for repairs, or experiencing expensive delay in sending to the factory for broken parts.

During the last few years there has been a change in sentiment in regard to education. The result of higher learning has been to educate away from the farm, but now the sentiment is to educate to the farm. The agricultural colleges, with instruction more or less along the lines indicated above, are to a great extent responsible for this change. They have been able to convince a great many people that an educated farmer, who conducts his farm in a business way, is surer of success than any business man; and, besides, that he leads a freer and more independent life. It is now being proved in many places in this country, as has often been proved in Europe, that a factory farm, properly conducted, is the safest business in which a man of means can engage. For this reason, many city-bred young men now take a course of training in agricultural colleges instead of spending their college years studying chiefly Latin and Greek. A man who takes a thorough course in a high-grade agricultural college not only has as good an education as he who attends a literary college, but he has a practical knowledge besides.

The new education recognizes that investigation of nature should have a prominent place in every course of study. Instead



FARM MECHANICS STUDENTS IN BLACKSMITH SHOP.

of tires are also carried on and the draft taken of the various farm implements under different field conditions. In this connection, advanced courses are also given in farm implement design for such students as may wish to fit themselves for positions with implement manufacturers.

of memorizing classical formulas, original investigation is encouraged. Instead of accepting without question the statement of instructor and text-book, the student is encouraged to think things out for himself. The common, everyday things of life are not ignored, but rather are given prominence, because they enter into the very life of the industrialist.

It is the intention of the Department of Agriculture, in establishing this new bureau, to render every assistance in its power in the direction of fostering and increasing the efficiency of such practical educational institutions. No doubt a great many of the students thus trained will be available in connection with the export trade of the United States in agricultural implements. Numbers will doubtless be sent out by implement manufacturers, not only to influence the sale of their machinery, but also to give practical instruction as to its use. Bulletins issued by the bureau from time to time will be distributed with the same end in view.

AMERICAN CONTRACTS IN BRAZIL AND PERU.

Two contracts recently closed by a New York firm are an excellent indication of the constantly growing demand in other countries for machinery from the United States. One of these contracts is for the construction of an electric lighting plant, a street railway power-house and numerous municipal improvements in Iquitos, Peru. The other is for extensive electrical installation at Manaus, Brazil. In connection with this work, a 600-horsepower engine and a 400-kilowatt generator have just been shipped from New York to Brazil.

The contracts will aggregate about \$300,000, and both were secured by Messrs. Bytton Bros., of New York City, after a sharp contest with English, French and German companies. This American firm is composed of three brothers, one of whom, Mr. D. Bytton, is at present in New York; the others are in Iquitos and Manaus.

A representative of the AMERICAN EXPORTER secured an interview with Mr. D. Bytton for the purpose of learning the reasons why the contracts were awarded to an American firm. "We gained the contracts," said Mr. Bytton, "simply because the authorities of Peru and Brazil appreciate the superiority of materials made in the United States. This appreciation of American machinery is becoming stronger every day throughout South America. Although I am not a native-born American, I realized years ago that American goods were far better than those of any other country, and very naturally I decided to handle them. My interests were entirely in South America, and I foresaw that eventually that country would give the greater share of its trade to the United States. So I proceeded to ally my business dealings with the United States, and now I feel as though I were a thorough American.

"For many years my firm has been bidding for contracts in South America, and when we secured them, it was with the understanding that American machinery was to be supplied. By pursuing this policy we have been highly successful. Only a short time ago we built a power-house in the town of Labria, in Bolivia. Next, we arranged to make extensive improvements in Manaus. This contract involved about \$100,000. Our Manaus contract consisted principally in supplying modern equipment to the traction system and installing a large sawmill.

"After we had begun laying plans for this work, we learned

that extensive improvements were contemplated in Iquitos. We put in bids for the work, along with firms representing England, Germany and France, and we obtained the contracts. The reason we won is very simple. It was because we were to install American machinery. We will be paid for our work on a basis of a certain percentage of the surplus in the Iquitos treasury, and they always have a very large surplus.

"From the experience I have had in South America, I should say that it is developing at a wonderful rate. This is particularly the case in Brazil, Argentina and Peru. The people of South America prefer American goods. American machinery has a great foothold in Brazil, and there is a growing demand for it in other countries. The chief reason for this constantly increasing demand for American machinery is, of course, the superior quality and the low price. Then again, there are a large number of engineers from the United States in South America. They always insist upon having American goods in connection with their work. It will not be long before the United States will practically control the trade of South America."

RECORD-BREAKING AMERICAN SHIPMENTS.

A striking instance of the enormous increase in America's export trade is furnished by the record of goods shipped through New York and other Eastern ports during last May by the United States Steel Corporation. This record shows a larger quantity of wire, wire nails and iron pipe sent out than has ever before been shipped abroad in a like period of time. The consignments, which went to practically every country in the world, amounted to more than 14,000 tons.

A similar record was also made in the exports for May of steel billets, rails, beams, blooms, plates, bars and hoops. About 40,000 tons were shipped. The wire exports amounted to 6,380 tons, of which 1,564 tons went to European ports, 1,141 to Australia and 1,103 tons to South America. Lots of about 1,000 tons each were also sent to South Africa and Cuba. The exports of nails were 2,496 tons, Europe and Japan being the heaviest buyers. To these points also about 5,000 tons of pipe were sent.

The steel billets shipped abroad during the month aggregated 19,600 tons. Of this enormous shipment 12,000 tons went to English ports and 57,600 tons to Wales. Of the shipments of rails, aggregating 18,757 tons, 10,000 tons went to Argentina and 7,811 tons to Mexico. About 2,000 tons of beams, blooms, plates, bars and hoops were exported. The steel plates went to Glasgow, while most of the other material was forwarded to the Far East.

Another record-breaking American shipment to be made during the present month will be that of 270,000 cases of refined petroleum to three Japanese ports. The big steel Elder-Dempster steamship Monarch has been chartered by the Standard Oil Company to carry the cargo, which will comprise 12,000 tons dead weight and will be the largest of its kind ever shipped from an American port. The Monarch will take the Cape of Good Hope route instead of passing through the Suez Canal, and it is thought the trip will be made in about sixty days.

Mexican Government's Large Order.—An order for 1,200 tons of expanded metal was recently received by the Central Expanded Metal Company, of Pittsburg, Pa. It was awarded by the Mexican Government, and is said to be the largest order for this material ever made. The contract calls for 2,000,000 square feet of 3-inch mesh, 10-gauge, to be used in the construction of an aqueduct to supply the City of Mexico with water.

THE AMERICAN OUTLOOK IN CHINA.

"America's trade with China is assuming vast proportions. The Chinese like the quality and prices of American goods, and the United States has great commercial opportunities in our country. I think, however, that in order to seal an absolute friendship between the two nations, America should effect radical changes in the Chinese exclusion laws."

This statement, made to a representative of the AMERICAN EXPORTER by Mr. Lock Wing, the Chinese Vice-Consul in New York, indicates the possibilities for the commercial supremacy of the United States in China. Wonderful changes are taking place in the land of Confucius at present, according to Mr. Wing. Following in the wake of Japan, China is beginning to realize the necessity of discarding its ancient policy of seclusion and leading what President Roosevelt has so aptly termed "the strenuous life."

Young men are pouring into America from the Flowery Kingdom to attend our universities and to learn something of our commercial methods. Only a few days ago two young Chinese, Ting Chin Chen and Ying Hsing Wen, were admitted as cadets at the United States Military Academy, this being the first time in the history of West Point that representatives of the Chinese Empire have ever been received there as students. China is taking the United States as a commercial and educational model, just as Japan did; and it is already beginning to show signs of progress. A summary of its commerce during the last four years proves this. In 1900, China bought goods valued at 16,124,493 Haikwan taels from the United States. In 1904, America's exports to that country amounted to 29,180,946 Haikwan taels. This shows an increase of 12,466,553 Haikwan taels in America's trade with China during the last four years. The value in American currency of the Haikwan tael is about 70 cents.

In view of the increase of our commerce with China, the question of dealing with the exclusion laws has been brought forward with considerable force. President Roosevelt, after the final summer meeting of his Cabinet, issued a letter to the Acting Secretary of State, in which he declared that the officers of the immigration service must be more lenient in administering the exclusion law. This communication directed that the State Department issue a circular letter on the subject to the American diplomatic and consular officers in China. The President also informed the Secretary of Commerce and Labor, who is charged with the enforcement of the exclusion law, that any officer of the immigration service who shows discourtesy to Chinese of the exempted classes, applying at the United States ports for admission, will forthwith lose his place. The letter is of such vital importance that we reproduce it in full:

THE WHITE HOUSE,
WASHINGTON, June 24, 1905.

To the Acting Secretary of State:

The State Department will immediately issue a circular to all our diplomats and consular representatives in China, setting forth the following facts and stating that it is issued by direct order of the President:

Under the laws of the United States, and in accordance with the spirit of the treaties negotiated between the United States and China, all Chinese of the coolie or laboring class—that is, all Chinese laborers, skilled or unskilled—are absolutely prohibited from coming to the United States; but the purpose of the

Government of the United States is to show the widest and heartiest courtesy toward all merchants, teachers, students and travelers who may come to the United States, as well as toward all Chinese officials or representatives in any capacity of the Chinese Government. All individuals of these classes are allowed to come and go of their own free will and accord, and are to be given all the rights, privileges, immunities and exemptions accorded the citizens and subjects of the most favored nation.

The President has issued special instructions through the Secretary of Commerce and Labor that, while laborers must be strictly excluded, the law must be enforced without harshness, and that all unnecessary inconvenience and annoyance toward those persons entitled to enter the United States must be scrupulously avoided. The officials of the Immigration Department have been informed that no harshness in the administration of the law will for a moment be tolerated, and that any discourtesy shown to Chinese persons by any official of the Government will be cause for immediate dismissal from the service.

The status of those Chinese entitled to free entry to the United States is primarily determined by the certificate provided for under Section 6 of the act of July 5, 1884. Under this law the diplomatic and consular representatives of the United States have, by direction of the President, been instructed before visé-ing any certificates, strictly to comply with the requirements of that portion of Section 6 which provides as follows:

"And such diplomatic representative or consular representative whose indorsement is so required is hereby empowered, and it shall be his duty before indorsing such certificate as aforesaid, to examine into the truth of the statements set forth in said certificate, and if he shall find upon examination that said certificate or any of the statements therein contained are untrue, it shall be his duty to refuse to indorse the same."

The certificate thus viséed becomes prima facie evidence of the facts set forth therein. The immigration officials have now been specifically instructed to accept this certificate, which is not to be upset unless good reason can be shown for so doing.

Unfortunately, in the past, it has been found that officials of the Chinese Government have recklessly issued thousands of such certificates which were not true, and recklessness has also been shown in the past by representatives of the American consular service in visé-ing these certificates. The purpose of this Government is to make these viséed certificates of such real value that it is safe to accept them here in the United States. This will result in doing away with most of the causes of complaint that have arisen. The Chinese student, merchant or traveler will thereby secure before leaving China a certificate which will guarantee him against any improper treatment.

But in order that this plan may be carried out it is absolutely necessary that the diplomatic and consular officers, instead of treating their work in visé-ing these certificates as perfunctory, shall understand that this is one of their most important functions. They must not issue any such certificate unless they are satisfied that the person to whom it is issued is entitled to receive it, and they will be held to a most rigid account for the manner in which they perform this duty. If there is reason to believe that any certificate has been improperly issued or is being improperly used, a thorough investigation will be made into its issuance.

The only way in which it is possible, while fully carrying out the provision of the law against the immigration of Chinese laborers, skilled or unskilled, to secure the fullest courtesy and consideration for all Chinese persons of the exempt classes, such as officials, travelers, merchants, students and the like, is through the careful and conscientious action of our diplomatic and consular representatives under the proposed policy of the Department of Commerce and Labor. The change will simplify the whole administration of the law; but it cannot be made permanent unless the diplomatic and consular representatives do their full duty and see to it that no certificate is issued with their visé unless the person receiving it clearly comes within one of the exempt classes and is fully entitled to the privileges the certificate secures for him.

Accordingly, all our diplomatic and consular representatives in China are warned to perform this most important duty with the utmost care.

THEODORE ROOSEVELT.

The exclusion laws were first passed at the earnest solicitation of labor interests along the Pacific Coast. Eastern manufacturers were not affected and hence paid little attention to the subject at that time. But now that America's export trade with China has increased to such a great extent and has such a splendid outlook, it has become imperative that more consideration be shown to this Asiatic nation. Therefore, the Eastern manufacturers, with all the great commercial strength behind them, have appealed to Washington; the result has been an immediate order to lessen the hardships of the exclusion laws. Hence, a large part of the credit for this great step is due to the efforts of Eastern manufacturers.

"The next decade will witness a great transformation in China, and America should play a prominent part in this change," said Vice-Consul Wing, in discussing the country's attitude toward the United States. "China now gets from America large quantities of cotton goods, oil, machinery, tobacco, copper, rails, clocks, glassware and even perfumery. But the enormity of our present trade with the United States is not to be compared with what it will be a few years hence. Let us take an impartial survey of China and find the reasons for my prediction. Before our war with Japan, we were very conservative. We simply wanted to be let alone. Now, we no longer want to be let alone; we want to go forward with the rest of the world. That war was a great lesson to China. We have determined to discard the old and adopt the new.

"To make such a change is quite a problem for our nation to take up. It means years and years of patient, silent toil. With China, the results achieved have been remarkable. Our commerce has taken great strides; our young men are striving to learn; we are catching the spirit of the rest of the world. In thus going forward, we must look to some one nation to act as our guide and counselor. What nation shall that be? Perhaps Japan, perhaps America. China has always been inclined to show friendship for America, and, looking at our relations from a commercial standpoint, we are ready to give preference to the United States.

"The Chinese are largely agriculturists and we like your agricultural implements and are beginning to adopt them. We are equipping our railroads upon which to transport our products largely with American railroad locomotives and materials, realizing that they are of a superior quality, and furthermore, they are cheap. It is for these and other reasons that China is disposed to trade largely with America. The greatest friendship should always exist between the Chinese Empire and the United States. Our country has great resources and yours can help us develop them."

In view of the positive orders given by President Roosevelt for the protection of the Chinese privileged class, it is sincerely hoped that the officials of China will cooperate with American consuls and prevent any extensive abuses. Should advantage be taken of this liberal policy just adopted, and Chinese coolies sent to the United States in the guise of merchants and students, it would, of course, become necessary to again enforce the exclusion laws with vigor.

TRADE GAINS IN CANADA.

According to figures compiled by the Bureau of Statistics, exports from the United States to the Dominion grew from \$51,903,579 in the ten months ending with April, 1897, to \$104,155,893 in the ten months ending with April, 1904. For the ten months ended April, 1905, the value rose to \$114,943,079. The increase thus shown is only a continuation of the growth which, with trifling exceptions, has characterized America's trade with Canada since 1870. From 1855 to 1866 a reciprocity treaty was in operation between the two countries, but from 1867 to 1897 commerce was not affected by trade arrangements.

Beginning in April, 1897, products from Great Britain were admitted to Canada at a reduction of 12½ per cent., compared with the duties charged on importations from the United States. On August 1, 1898, more trouble was experienced by American exporters. The reduction in favor of goods from the United Kingdom was changed so that the United States had a handicap of 25 per cent. to contend with. This handicap was increased to 33 1/3 per cent. on July 1, 1900. In spite of these difficulties, however, American goods were so well liked by the Canadians that our trade with that country has continued to increase, instead of falling off, as would naturally be supposed.

In the fiscal year 1855, the first year of reciprocity with Canada, the exports of the United States to that country were \$27,741,808 in value. In 1866, the closing year of the reciprocity period, they amounted to \$24,328,880. During all this time, it must be recalled, the United States was struggling with internal troubles of the most serious nature, which terminated in the Civil War. Almost three times as great as our exports to Canada in 1866 were those of 1897, the year which inaugurated the policy by which Great Britain and certain of her colonies were given the benefit of a special reduction in duties charged upon importations. For that period Canadian exports from the United States amounted to \$64,928,821. Each succeeding year has shown an increase. The total in 1904 was \$131,274,346.

During the ten months ending with April, 1905, we sent to Canada \$17,735,259 worth of coal; \$4,673,488 in unmanufactured cotton; \$2,472,659 in manufactured cotton; \$1,642,655 worth of agricultural implements; \$1,309,555 worth of electrical machinery; \$1,055,699 worth of cars and carriages; \$975,978 worth of timber; \$867,660 worth of boots and shoes; \$789,203 in locomotives, and \$609,755 in furniture. Compare these figures with the values of similar goods exported to Canada by the United States in 1897: Cotton, unmanufactured, \$2,792,895; cotton, manufactured, \$2,752,798; agricultural implements, \$291,107; cars and carriages, \$100,668; boots and shoes, \$200,450, and furniture, \$493,117. No statement is obtainable as to the exact value of the electrical machinery or locomotives sent to Canada in 1897.

Figures taken from the "Annual Tables of Trade and Navigation" show that in 1904 the source of Canada's imports was as follows: United States, 60 per cent.; United Kingdom, 24.5 per cent., and other countries, 15.5 per cent. In 1890 the percentage of American goods sent to Canada was 46.4 per cent.; that of the United Kingdom, 38.5 per cent., and of other countries, 15.1 per cent. The percentages in 1897 were 55.4 for the United States, 26.4 for the United Kingdom and 18.2 for other countries. These percentages are striking proofs of the wonderful gains the United States is making in its trade with Canada, in spite of the advantages accorded the mother country.

THE GERMAN-AMERICAN TARIFF CRISIS.

It is important for the commercial interests of both that the statesmen of Germany and America should at once arrange a new reciprocal tariff agreement. American merchants are clamoring for this move, and there is an almost unanimous sentiment in favor of it in Germany. It will be recalled that the new German tariff was adopted about two and a half years ago, but owing to certain commercial treaties which could not be terminated without notice in advance the law will not go into effect until March, 1906. Announcement was recently made in Berlin that on that date Germany will bring to an end the tariff arrangement now existing with America. Moreover, she has negotiated seven special commercial treaties with European nations, all of which have been adopted.

The situation is easy to understand and critical in its portent. Unless Germany and America arrange another reciprocal agreement before next March, there is danger of a tariff war between the two countries which would be disastrous to both. Germany, next to the United Kingdom, is America's best customer. The exports of the United States to that country have more than doubled in the last ten years, and in 1904 they amounted to \$215,000,000. For the year ending June 30, 1904, Germany shipped goods valued at \$109,129,047 into this country. This shows that while American products are thoroughly appreciated by the Germans, they feel that they should get more concessions. This point is one that will undoubtedly come up before Congress next fall.

In the meantime both German and American merchants are agitating the question of a new tariff agreement. At the last meeting of the New York Chamber of Commerce it was brought up by Mr. Gustav H. Schwab, chairman of the Committee on Foreign Commerce and the Revenue Laws, who submitted the following resolutions:

"WHEREAS, The new customs tariff adopted by the German Empire, and the commercial treaties concluded by that Empire with important European countries, will seriously affect our growing export trade to Germany; and

"WHEREAS, Our exports of merchandise to Germany have more than doubled in the last ten years, and have reached the sum of \$215,000,000 in the year 1904, exceeding in value the exports of any other nation into Germany, and proving that country to be our best customer after the United Kingdom; therefore, be it

"Resolved, That the Chamber of Commerce of the State of New York heartily favors the conclusion of a commercial treaty of reciprocity between the German Empire and the Government of the United States, by which the trade relations between both countries may be adjusted upon a mutually advantageous basis; and be it further

"Resolved, That the Committee on Foreign Commerce and the Revenue Laws be instructed to use all proper means and to exercise every honorable effort to secure the conclusion and ratification of such a treaty of reciprocity between the two countries."

At the same time he introduced these resolutions, and both measures were passed:

"WHEREAS, Our export trade to France, Russia, Switzerland and Austria-Hungary is threatened with material reduction, if not practical extinction, by the adoption of new maximum tariff rates of duty, either now in force or shortly to be adopted by these countries; be it

"Resolved, That the Chamber of Commerce of the State of New York advocates the early conclusion of commercial treaties of reciprocity with the countries above mentioned; and be it further

"Resolved, That the Committee on Foreign Commerce and the Revenue Laws be instructed to use every honorable means at the proper time to secure the adoption and ratification of such treaties of reciprocity or commercial treaties."

As to the German view of the situation, Mr. Richard Guenther, United States Consul-General at Frankfort, reports that there is a prevailing opinion among the merchants of Bremen, at least, that the "most favored nation" clause with trans-oceanic countries be continued. In German commercial circles, according to Mr. Guenther, the new commercial treaties which have been signed between that country and seven others are not altogether popular. The association of Saxon manufacturers recently sent out to its members letters of inquiry as to their opinion of the new treaties. Of the 357 firms which have answered, only 9 expect favorable results from the treaties; 97 think that present conditions will not be affected, and 251 believe that their trade will be seriously injured, and to some countries will become almost impossible.

It is a matter of conjecture as to whether these replies, showing as they do the feeling of dealers in the German Empire who are most affected by the treaties, will change the apparent attitude of that government toward the United States. At any rate, a critical situation exists, and there is only one solution: let the leaders of America and Germany avert the crisis. In view of existing conditions, a recent declaration attributed to President Roosevelt is interesting. A few weeks ago Mr. T. J. Hagenbarth, of Salt Lake City, Utah, gained an audience with the President for the purpose of suggesting plans for increasing America's export trade. Mr. Hagenbarth said that he wanted "reciprocity preferably, but if not that, then retaliation." President Roosevelt is reported to have replied that he thought both reciprocity and retaliation could be adopted by the United States. According to Mr. Hagenbarth, the President stated that he favored a reciprocal arrangement with countries that were disposed to be commercially friendly, and retaliation for such countries as show a disposition to treat the United States with unfairness.

The New York *Staats-Zeitung*, the leading German newspaper in the United States, says Germany will be the loser should a tariff war ensue, as fully 75 per cent. of the goods now exported to Germany from the United States are necessities that Germany must buy in the United States, while the United States can produce nearly all the things she imports from Germany or secure them as cheaply in England or France.

The importance of the United States to German foreign commerce is seen from the fact that during the calendar year 1903 this country held first rank among importing nations, and third rank among countries of destination of German exports.

The principal exports from the United States to Germany during the fiscal year 1904, according to latest accounts of the Bureau of Statistics, were: Unmanufactured cotton, 109 million dollars; breadstuffs, over 16 million dollars; provisions, about 21½ million dollars; manufactures of copper, 11 1-3 millions; mineral oils, 9 millions; iron and steel manufactures, about 5 millions; unmanufactured tobacco, about 5 millions; wood, and manufactures, about 4½ millions; oil cake and meal, about 4 millions; fertilizers, about 2½ millions, and agricultural implements, about 1½ million dollars.

ARGENTINA AND THE UNITED STATES.

By Sr. D. Salvador A. Pratto,

Argentine Consul at St. Louis, Mo., and Specially Commissioned to Study Trade Possibilities Between the Two Countries.

Before coming to the United States, I had naturally formed some conception of the magnitude of its territorial extent, of its inexhaustible natural resources, and of the tremendous importance of its many and varied industries. I also had some conception of the commercial genius of its people and comprehended the large scale on which its business interests are conducted.

After a residence of a year in the United States, during which time I have visited its most important business centers and inspected its magnificent manufacturing establishments, it is a pleasure to record the fact that my previous conceptions were wholly inadequate. By this I do not mean that I have found no grounds for criticism, for a nation scarcely more than a hundred years old, which has so rapidly taken its place among the world-powers, has naturally developed unevenly. Its internal interests have been so large and its own problems so momentous, that its people, and even its leaders in politics and trade, have not had time to cultivate closer relations with foreign countries, not even with its sister republics in South America.

At the present time, however, I am gratified to observe an awakening in the most important centers of the nation's life. The United States is beginning to study economical conditions—not merely as they exist to-day, but in the light of the future as well. The highest officials of the Government—who are not functionaries but broad-minded men of affairs—are busying themselves with foreign relations. Special agents are being sent abroad to investigate trade conditions, with a view to expanding the export trade. The existing tariff and immigration laws are being examined with a view to ascertaining whether a revision would not be beneficial to the larger welfare. Manufacturers, in particular, are becoming interested in foreign trade. The subject of credits, the important questions of packing and transportation, the establishment of banking systems and steamship lines, as well as many other kindred topics, are now receiving attention.

All these facts indicate that the United States is beginning to realize its vast commercial possibilities. Its captains of industry are asking themselves, Why should we ship our raw materials, our cotton, iron and steel, to Europe to be finished by European manufacturers and then reshipped to South America and sold at our very doors? The reason Americans have not asked this question earlier is because its home market has hitherto been so vast that its factories could not do more than supply the demand from the American consumer. The manufacturer has not cared to send his products abroad, to be sold on long credit, when a purchaser stood waiting to take all his output at cash prices.

This condition of things is now undergoing a change, however. The present tendency is in the direction of the consolidation of a number of companies into one gigantic corporation, whose capitalization allows an enlargement of its plant commensurate with any demand for its product that may arise,

however great. These immense plants must be kept in regular operation at full capacity, in order to reap the benefit from small economies. As a natural result, the management will begin to seek a larger market, and will no longer wait for the market to seek the product. Branch offices will be established in commercial centers all over the globe and representatives speaking their languages will introduce the American product to the consumer. There can be no question as to the outcome. When the American deliberately makes up his mind that he needs the foreign trade, he will go after it with the same energy and genius that have given him supremacy in other lines. And when he has determined to meet European competition in South America and elsewhere, he will carry home a large part of the export and import trade in his market wagon.

Prolonged contact with American business men and intimate study of American ideas only serve to intensify my conviction that the best interests of Argentina and other South American countries is to be served by the cultivation of closer business relations.

The American republics—North, Central and South—have many interests in common, and their geographical proximity alone would argue for friendly business intercourse. With the Panama Canal in operation, the west coast of South America will be in easy reach of the markets of the United States; with improvements in steamship service, Argentina and other republics on the east coast would find it far more to their advantage to trade in New York and other eastern markets than to ship their exports to Europe. The population of the United States is increasing with such marvelous rapidity that it will presently offer a splendid market for the products of Argentina's forests, fields and pastures.

Another important point which should be borne in mind is the intellectual and moral influence of the United States upon growing countries with which it trades. In

America there is no stagnation of ideas, no encrustation of obsolete customs, no narrowness of race, politics or religion. The nation is in the midst of a sane, vigorous, exuberant growth, and it naturally spreads the contagion among those with whom it trades.

A striking example is Japan. In a recent address delivered in Washington, a member of the Japanese diplomatic corps gave America the chief credit for the conditions which have made his little empire victorious, not only in the recent war, but in the larger commercial sense, as well. Argentina and her sister republics are not antagonistic to the inspiring influence of such a country as the United States, a country which is above the suspicion of seeking to annex foreign territory on the slightest pretext. I am personally convinced, after a residence here where I have had an opportunity to study the public mind, that there is no military spirit or aggressive tendency such as the so-called "yellow press" attributes to the directing minds of this country. A people, living the strenuous life and feverishly active in their manufacturing and work, energetic even in their amusements, can have no time or thought for Napoleonic tendencies of military glory. With the symbolism of Minerva, instead, the United



SR. DON SALVADOR A. PRATTO.

States has dominated the world and will continue its triumphal march. The nations of this hemisphere, far from becoming alarmed, should follow such an example. On the other hand, the United States must cultivate us and seek our friendship and interchange, for I sincerely believe that the American continents will be found a far more fruitful field than the Orient.

This happy state of affairs can only come to pass through the medium of trade relations. The two republics have not yet become acquainted. Each is merely cognizant of the existence of the other and the exchange of friendly courtesies is only beginning. South Americans want the manufactured products of the United States, for they are better suited to our conditions; and welcome also those moral influences that come with contact between civilized nations, which is always beneficial. On the other hand, the United States will have steadily increasing need of the products of Latin-America, together with the broadened field of vision resulting from export and import relations. And I am more than ever convinced that the near future will bring increased opportunities to both sections as a logical result of the increasing friendliness of their mutual relations.

AMERICAN TRADE WITH COLOMBIA.

By **Sr. Don Enrique Cortes,**

Financial Agent of the Colombian Government.

There is no serious and permanent reason why the United States should not control the largest share of South America's trade. The utmost cordiality ought to exist between this great nation and the Latin-American republics throughout. That is, of course, the first essential of healthy trade relations. The geographical location of the United States also serves to make the outlook favorable, since the facilities for transporting American goods to South America and bringing the products of Latin America to the United States are now being rapidly improved. The chief fact of importance, however, is that the United States supplies very much the kind of raw materials and the character of manufactured products that South America needs. Under such conditions it does not seem possible for the United States to fail to receive the largest share of our trade in the future.

This is especially the case with agricultural implements and all classes of machinery. American designs are much better adapted to the needs of Colombia and other South American republics, and are generally regarded as superior in workmanship. Cotton goods and other products of American factories are also coming into general favor, because those manufactured in the United States are of better quality than those imported into South America from Europe.

The chief reason why English and German products have been in demand heretofore is traceable to the fact that European manufacturers have flooded the country with catalogues and advertising matter, printed in the language of the people to whom they were sent. American manufacturers are only beginning to show enterprise in this direction, and results are already manifest.

It is gratifying to find the same awakening in the packing and transportation of goods destined to South American countries. Manufacturers of the United States have heretofore been too busy to study conditions and ship their goods accordingly. Now that exporters are beginning to realize the importance of packing their

products in light cases, suitable for transportation over inferior highways, the demand for such products will be notably increased. The movement in the direction of sending out American salesmen thoroughly conversant with the Spanish and other languages is another indication that manufacturers are studying trade conditions in the countries to which they ship.

Never before in their history have the Central and South American countries had a brighter outlook than at present, and never was there a more hopeful prospect for intimate commercial relations with the United States. In Colombia, for example, movements recently set on foot are almost certain to result in a largely increased demand for American goods. President Reyes, whose tenure of office has been extended to ten years, is deeply concerned in advancing the prosperity of his country in every possible way. One of the most important features of his policy is the improvement of transportation facilities. He has contracted for extensive railway construction in the interior of Colombia, the greater part of the capital and machinery for which will naturally come from the United States. He also regards good public highways as the arteries of trade, and therefore an evidence of a nation's prosperity. To improve the deplorable conditions which have existed heretofore, President Reyes has assigned the Colombian army to the work of making good roads. When this task is accomplished, and when American manufacturers devote more attention to the packing of goods, it may be confidently expected that Colombia will do the greater part of its trading in the markets of the United States.

New Steamship Inspection Rules.—Double inspection of steamships plying between the United States and Great Britain and Canada has been discontinued under the terms of a reciprocity agreement between the United States and Great Britain.

For some time past persistent efforts have been made to secure this arrangement, but they were unsuccessful owing to the disinclination of Great Britain to accept the American steamship inspection laws and regulations in lieu of its own. The new arrangement means a vast saving in time. Where it formerly took two days to inspect a British steamer in New York, under the new agreement it will only take two hours. The saving will be one of convenience and time for the shipowners and of expense and time for the steamship inspection service of both governments.

For instance, the White Star boats have had to carry two sets of life preservers—one to comply with the provisions of each certificate. Also there were two separate inspections, each lasting sometimes two days, and requiring the blowing out of the boilers each year—one in America and one in England. Under the new arrangement the English certificate will be accepted in America and the United States certificate honored by English and Canadian inspectors.

Electric Railways in Peru.—The railway lines of Lima, Peru, comprising a system about sixteen miles in length, is to be transformed into an electric line, the overhead trolley having been adopted. A new company representing American and local capital succeeds the old one. The electric and other material required has been ordered from the United States, as also happened in the case of Lima's two suburban lines, which are now in successful operation.

• THE MOVING PLATFORM IN CITIES.

A moving platform as a means of transporting passengers through a subway in New York City is one of the plans under consideration. It was first proposed to build it in 34th street, but as that thoroughfare is so closely identified with the new Pennsylvania Railroad terminal station now in course of construction, the Rapid Transit Commission, which has the matter of interurban transportation under its control, has decided to give that street up to subway electrical trains connecting with the present subway system. However, the Commission endorsed the moving platform idea as thoroughly practical, commercially and mechanically, and at no distant date one of these platforms will be built in the downtown section of New York.

The plans of the moving sidewalk which it was proposed to build in 34th street provided for a subway with a four-section platform. The first was to be stationary, the second to move at a rate of three miles, the third six miles, and the fourth nine miles an hour. The fastest section was to be provided with cross-section seats like a street car. The capacity of this platform was stated to be 48,000 seated passengers per hour, delivered at any given point. Short rides would increase the capacity.

The proposed subway will be built of reinforced concrete. Between stations pillars will support the roof through which light will be admitted by manholes. The height will be fourteen feet and the width thirty feet. From the platforms to the ceiling will be eight feet, while the lower six feet beneath the platform will be occupied by the machinery necessary to carry along the platforms at different speeds. In order to provide time for repairs and inspection, the main platform will not be run after midnight; in its stead a so-called stationary platform will be propelled at a rate of three miles per hour to care for any belated travelers.

The platforms are to be built of plate steel, covered with rubber to give a firm footing. The plates will overlap at the edges laterally, so that passengers will not be injured in stepping from one to the other. The first two are simply stepping platforms, the third being the real transporting platform. On the first two upright posts will be placed at frequent intervals to assist passengers in moving from one to the other.

In order to allow the platform to turn in curves around the loops at each end of the line, the platform will be built in six-foot sections. The sections are to be coupled together by means of 46-inch steel links, and the coupling pins placed in the center, from which the curves of the abutting ends of the platform will be struck. In this manner the openings between the joints can be reduced to a minimum. No open spaces can be seen by the passengers, but a smooth, continuous surface will be presented for walking. At each station escalators or moving platforms will haul the passengers to the surface and lower them to the subway station platform, two stations to each block being planned, with plentiful turnstile exits and ticket offices sufficient to accommodate all.

Beneath the platform the machinery will be placed. Extending longitudinally under each platform will be a pair of beams shaped like the letter I, with the upper flanges riveted to the under side of the platform. The lower flanges will support the

weight of the platforms upon pairs of wheels carried on traverse-shafts mounted at intervals of two feet nine inches upon concrete piers. Between each pair of longitudinal I-beams will be carried a pair of horizontal guide-wheels, which engage a guide-rail to keep the platform in alignment. Ten-horse-power motors are to be mounted on the floor of the subway each seventy-five feet, and connected with the traverse-shafts by a chain drive; these shafts will carry the driving wheels of the platform. The diameter of these wheels will determine the rate of speed of the platforms—the 8-inch wheel driving the three-mile platform, and 16-inch wheel the six-mile, and the 24-inch wheel the nine-mile or main platform. The driving wheels and the horizontal central guide wheels are to be covered with rubber to give a smooth, even, and silent motion.

Electricity will be the motive power, the power being conveyed by cables from a distant power-house.

The economy of operation is the main argument advanced in favor of the moving platform. Mr. Stillwell, the electrical expert of the Interurban Railway, is authority for the following statements of facts and figures:

The moving platform has a great advantage in respect of the dead weight carried per passenger; for whereas in the local subway service 1,241 pounds of dead weight must be carried for each seat provided, and in the Manhattan six-car local service 790 pounds per seat, in the case of the moving platform the dead weight will amount to only 437 pounds per seat, or one-third of what it is in the case of the subway.

There is, moreover, a large saving of energy resulting from the fact that the moving platform does not stop at stations. In the local service of the subway over two-thirds of the energy supplied to the cars is dissipated in braking. In other words, if the cars moved at uniform speed and never stopped at stations, it would require only one-third of the power plant to keep the whole system in operation. A comparison of the power required to move the trains and to move the platform shows that the Manhattan elevated cars require at the power-house 30 kilowatts per car, and subway cars require, at equal speed, about 50 kilowatts per car. In the case of the subway the energy required is practically 1 kilowatt per seated passenger; that is to say, 10 kilowatts at the power-house are required to transport ten seated passengers in the subway. Estimating the rolling friction of the platform at about six pounds per ton, Mr. Stillwell estimates that 10 kilowatts, instead of moving ten passengers, as in the case of the subway, would move 260 passengers if they were seated on the moving platform. This great difference of 1 to 26 is due to the small dead load, to the absence of stopping, and to the fact that the rolling friction per ton is very much less.

It has been charged against the moving platform that the speed, nine miles per hour, is low; but it was shown by Mr. Stillwell that, because of the frequent stops, say on the local elevated or subway trains, and of the great delay at stations in rush hours due to insufficient means of ingress and egress to and from the cars, the higher speed of the elevated and subway trains between stops is brought down, if the stops be included, to an average speed of 9.67 miles per hour, which is only a little over one-half mile per hour greater than that of the platform, which maintains its nine miles an hour continuously.

Finally, the capacity of the moving platform will be vastly

greater than even that of a four-track system when running under its shortest headway. The capacity of the four-track section of the New York subway, using eight-car express trains at intervals of 2 minutes, and five-car local trains at intervals of 1 minute, is 28,080 seated passengers an hour in one direction; whereas the capacity of the moving platform in one direction is 47,520 seated passengers per hour, an increase of nearly 70 per cent.

From present indications it is quite possible that one of these platforms will be placed in 23d street, New York, across town between river and river, and later on one may be put in the Wall street district to facilitate travel between the Battery and the City Hall.

Engineers believe this system of travel will soon be taken up in other countries, and where extreme speed is not required will be adopted. It is pointed out that for crossing bridges it would be an admirable aid to passengers, as it could be operated cheaply enough to make one or two cent fares.

AMERICA'S COTTON SUPREMACY.

That the world will always have to look to America for its cotton and the original source of its supply of cotton goods is a fact strongly emphasized in a unique symposium recently issued by the Department of Commerce and Labor. On December 28th the Department of State instructed the American ambassadors and ministers to France, Germany, Italy, the Netherlands, Portugal, Spain and the United Kingdom to secure information relative to the development of cotton production in the tropical and sub-tropical countries under the jurisdiction of those governments. This action was taken at the request of the Department of Commerce and Labor to learn just what attempts other nations are making to grow their own cotton and whether these attempts are proving successful. The task required long and patient effort. The ambassadors and ministers to whom it had been assigned spent several months in gathering data, and the result of their work is embodied in the symposium referred to.

In substance the reports show that in Algeria the production of cotton is of little importance; in west Africa experiments are now being made and good results are hoped for; in Madagascar a field laboratory has been established to study the cultivation of the product; in Spain the government has put forward heroic efforts to encourage cotton-raising, with indifferent results; in Mexico great hopes are centered on tree cotton, and in Australia a hybrid plant is attracting considerable attention.

Of chief interest is the report of Hon. Arthur S. Hardy, United States Minister at Madrid. The entire cotton-raising agitation in Spain, he says, is a part of the general European movement to extend the area of cotton production, whereby the colonies and dependencies may, by furnishing an additional supply of the raw material, diminish their dependence upon the American market and control to some extent the violent fluctuation of prices. He then continues as follows:

"Cotton having been cultivated in the provinces of Grenada, Seville, Cadiz, Valencia and Murcia for more than four centuries, and no marked changes in soil or climate having occurred, it is evident that its cultivation is still feasible; but since 1825, when its production in Spain practically ceased, not only the condition of the world competition, but also the scale of wages, rent of land, etc., have so changed that the past offers no sure guide for the

future. For this reason the many treatises by Spanish authors on this subject have only an academic value. Moreover, recent experiments made with regard to the extraction of oil from the seed—an indispensable complement to successful culture—have been so desultory and on so small a scale that the practical question, Can cotton be cultivated to-day in Spain with commercial success? remains unanswered."

Minister Hardy then reviews the movements made by the Spanish government to encourage cotton-raising. On March 14, 1904, a royal decree was presented to the Cortes, in which a law intended to stimulate cotton planting in the Peninsula was urged. This law was passed in July. It provided that lands devoted to the planting and cultivation of cotton shall for the first three years enjoy immunity from ground, cultivation and cattle taxes. In order to encourage this culture three prizes were offered to such as prove to have realized the best results on the largest scale. For the best crop in the first year \$7,500 is to be awarded; for the best results in two years \$15,000 is offered, and for the best results in three years the prize is \$37,500.

"There are two serious difficulties in the way of growing cotton in Spain," Minister Hardy says. "The first of these is that on many lands suited to cotton production larger profits are obtained on other crops, and the second is that facilities for the extraction of the oil from the seed do not exist in Spain. Extracting this oil entails important modifications in the Spanish oil industry, so that even though the Peninsula could supply all the cotton for its factories, operating about 3,000,000 spindles, the producers could not for a long time find sale for their seed."

Australia's hope of improving its cotton output rests upon two new varieties of the product which have been evolved through hybridization by Dr. Tomatis, near Cairns, Queensland. Dr. Tomatis has named these varieties Caravonica I and Caravonica II. Caravonica I is a cross between a long-stapled cotton of the sea-island variety grown in Mexico and the sea-island variety of Peru, resulting in a perennial tree cotton, which attains a height varying from 10 to 14 feet. A single tree is said to yield from 300 to 500 bolls in a season, these bolls being so large that 70 will weigh a pound. Caravonica II is a silk cotton. Great hopes are entertained for the two varieties, but they are not yet out of the experimental stage.

With these uncertain conditions existing in the experiments under way by other nations, it can be seen that America's superb cotton plant is in no immediate danger of finding a rival. The Mexican tree, according to an inspection made by Mr. H. J. Webber, the head of the plant-breeding laboratory of the Department of Agriculture, produces a cotton that is of short fiber, which would reduce the value of the manufactured goods to some extent. While no reports have been made on this phase of the Australian tree product, it probably has the same handicap. Meanwhile, the United States will continue to supply the factories of the world with the best cotton grown.

Drill Companies Consolidate.—A big industrial combination recently effected is that of the Ingersoll-Sergeant Drill Company and the Rand Drill Company, with a capital of \$10,000,000. The new company operates under a New Jersey charter. The factories of the two companies are located at Phillipsburg, N. J., Easton, Pa., Tarrytown, N. Y., Ossining, N. Y., Painted Post, N. Y., 34th street, New York City, and Sherbrooke, Quebec. They will all be operated.

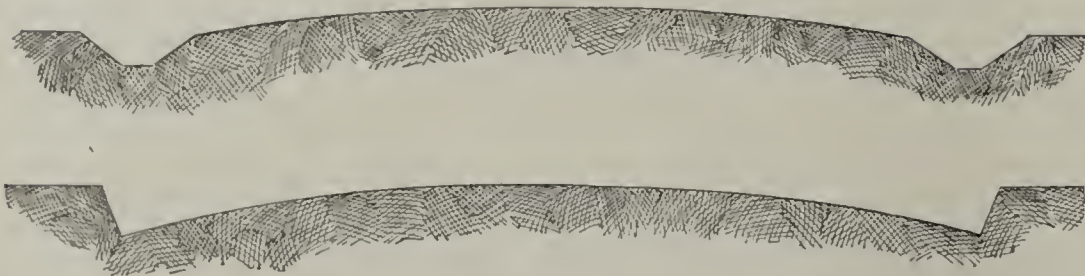
SIMPLE METHODS OF BUILDING GOOD ROADS.

By Maurice O. Eldridge,

U. S. Office of Public Road Inquiries.

The pages of history back to the dawn of civilization show that the first promoters of art and science, commerce and manufactures, education and government, were the builders of enduring highways. Memphis and Babylon, the two most ancient centers of civilization, were connected by a commercial and military highway, along which passed not only the armies of the great chieftains and kings of ancient days, but also the caravans of trade, bearing the priceless gems of gold, the rich spices and ivories, the textile fabrics, and other curious and unrivaled productions of the luxurious Orient. While we have some information relating to the road built by the Carthaginians many centuries before the Christian era, our first knowledge of scientific road construction was secured from the Romans. The Appian Way is probably the most celebrated road that has ever been built. Completed about the year 30 B. C., its length was 350 miles, and the methods which were carried out in its construction were so nearly perfect that sections of it exist to this day and in practically as good condition as when built.

The importance of good highways to a nation's commerce and general prosperity cannot be overestimated, for poor roads constitute the greatest drawback to development. Those localities where good roads have been built are becoming richer and more thickly settled, while those which do not possess these advantages in transportation are either undeveloped or are becoming poorer

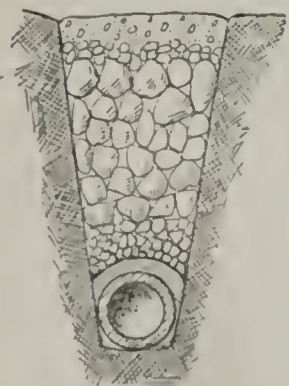


Cross-sections of two good forms for earth roads, constructed so that water will run off quickly. (Eldridge, Bul. 95, Dept. of Ag.)

and more sparsely settled. The art of road-building depends largely for its success upon its being carried on in conformity with certain general principles, the most practical of which are outlined below.

Level Surface the First Essential.

While, in general, straight roads are desirable, in hilly or mountainous countries, straightness should always be sacrificed to obtain a level surface. Not only do level, curved roads add to the beauty of the landscape and make the property through which they pass more valuable, but the horse is able to utilize his full strength over them. A horse can pull only four-fifths as much on a grade of two feet in one hundred feet, and his pulling power gradually lessens until with a grade of ten feet in one hundred he can draw but one-fourth as much as on a level road. All roads should therefore wind around hills or be cut through instead of running over them, and in many cases the former can be done without greatly increasing the distance. To illustrate: If an apple or pear be cut in half and one of the halves



Sub drain constructed with drain tile and stone. (Eldridge, Bul. 95, Dept. of Ag.)

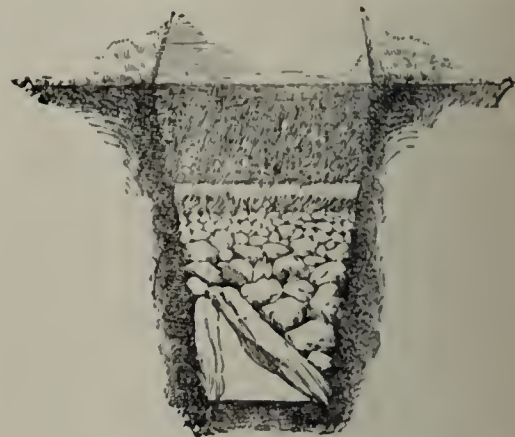
placed on a flat surface, it will be seen that the horizontal distance around from stem to blossom is no greater than the distance over between the same points. The mathematical axiom that "a straight line is the shortest distance between two points" is not, therefore, the best rule to follow in laying out a road. Better is the proverb that "the longest way around is the shortest way home."

The grade is the most important factor to be considered in the location of roads. Whether the road should be constructed of earth, stone or gravel, steep grades should always be avoided, if possible. As the grade increases in steepness,

either the load must be diminished in proportion or more horses or power attached. From Gillespie we learn that if a horse can pull on a level 1,000 pounds, on a rise of one foot in one hundred he draws 900 pounds; of one foot in fifty, 810 pounds; one foot in forty-four, 750 pounds; one foot in forty, 720 pounds; one foot in thirty, 640 pounds; one foot in twenty-five, 540 pounds; one foot in twenty-four, 500 pounds; one foot in twenty, 400 pounds, and on a rise of one foot in ten feet he draws 250 pounds. As a perfectly level road can seldom be had, it is well to know the steepest allowable grade. If the hill be one of great length, it is sometimes best to have the lowest part steepest, that the horse may be capable of exerting upon this his full strength, and to make the slope more gentle toward the summit to correspond with the continually decreasing power of the fatigued animal. So far as the descent is concerned, a road should not be so steep that the wagons and carriages cannot be drawn down it with perfect safety.

An essential feature of a good road is proper drainage, and the principles of good drainage remain substantially the same, whether the road be constructed of earth, gravel, shells, stones or asphalt. The first demand of drainage is attention to the shape of road surface. This must be "crowned," or rounded up toward the center, so that there may be a fall from the center to the sides, thus compelling the water to flow rapidly from the surface into the gutters constructed on one or both sides, and from these be discharged into larger and more open channels. Furthermore, it is necessary that no water be allowed to flow across a roadway; culverts, tile, stone, or box drains should be provided for that purpose.

In addition to being well covered and drained, the surface should be kept as smooth as possible—that is, free from ruts, wheel tracks, holes, or hollows. If any of these exist, instead of being thrown to the side, the water is held back and is either evaporated by the sun or absorbed by the material of which the road is constructed. In the latter case the material loses its solidity, softens and yields to the impact of the horses' feet and the wheels of vehicles; like the water poured upon a grindstone, that poured on a road surface not properly drained assists the grinding action of the wheels in completely destroying the surface. The wearing surface of a road must in effect be a roof—that is, the section in the middle should be the highest part and



Subdrain made with field stones. (Eldridge, Bul. 95, Dept. of Ag.)

the traveled roadway should be made as impervious to water as possible, so that it will flow freely and quickly into the gutters or ditches alongside.

The best shape for the cross-section of a road has been found to be either a flat ellipse or one made up of two plane surfaces, sloping uniformly from the middle to the sides and joined in the center by a small, circular curve. Either of these sections may be used, provided it is not too flat in the middle for good drainage or too steep at the gutters for safety. The steepness of the slope from the center to the sides should depend upon the nature of the surface, being greater or less, according to its roughness or smoothness. This slope ought to be greatest on earth roads, perhaps as much in some cases as one foot in twenty feet after the surface has been thoroughly rolled or compacted by traffic.

Construction of Subdrains.

When the road is constructed on a grade or hill, the slope from the center to the sides should be slightly steeper than that on the level road. The best cross-section for roads on grades is the one made up from two plane surfaces sloping uniformly from the center to the sides. This is done so as to avoid the danger of overturning near the side ditches, which would necessarily be increased

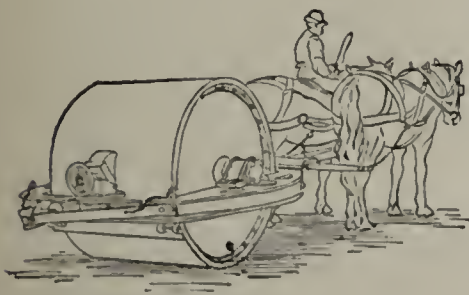


Surplus water lying in country road after a heavy shower, indicating lack of proper methods of drainage. (Eldridge, Bul. 95, Dept. of Ag.)

if the elliptical form were used. The slope from the center to the sides must be steep enough to lead the water into the side ditches instead of allowing it to run down the middle of the road. Every wheel track on an inclined roadway becomes a channel for carrying down the water, and unless the curvature is sufficient, these tracks are quickly deepened into watercourses which cut into and sometimes destroy the best improved road.

In order to have a good road it is just as necessary that water should not be allowed to attack the substructure from below, as that it should not be permitted to percolate through it from above. Where the road runs through low, wet lands or over certain kinds of clayey soil, surface drainage is not all that is necessary. Subdrains should be built. As Isaac Potter says, under-drains are

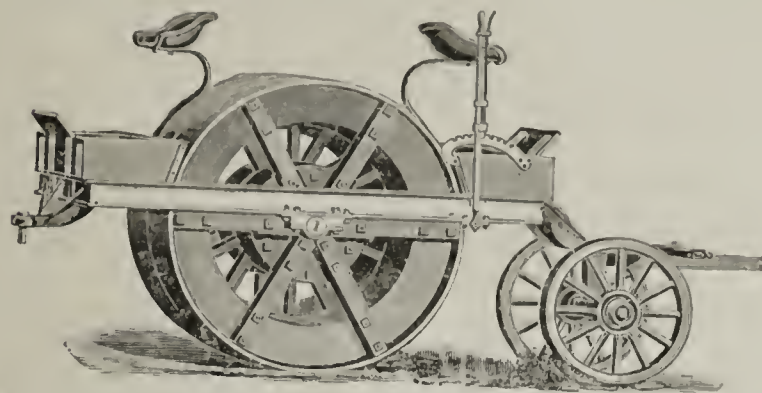
not expensive. On the contrary, they are cheap and easily made, and if made in a substantial way and according to the rules of common sense a good under-drain will last for ages. Use the best tools and materials you can get, employ them as



The Addison reversible horse roller, the weight of which can be increased by filling the roller with water.

well as you know how, and await results with a clear conscience. Slim fagots of wood bound together and laid lengthwise at the bottom of a carefully graded drain ditch will answer fairly well, if stone or drain tile cannot be had, and will be of infinite benefit to a dirt road laid on springy soils.

Subdrains should be carefully graded with a surveyor's level at the bottom to a depth of about four feet, and should have a con-



Champion reversible road roller, to be drawn by horses. (Eldridge, Bul. 95, Dept. of Ag.)

tinuous fall throughout their entire length of at least six inches for each 100 feet. If tile drains cannot be had, large, flat stones may be carefully placed so as to form a clear, open passage at the bottom for the flow of the water. The ditch should then be filled with rough field stones, and on these a layer of smaller stones or gravel and a layer of sod, hay, gravel, cinders or straw, or if none of these can be had, of soil.

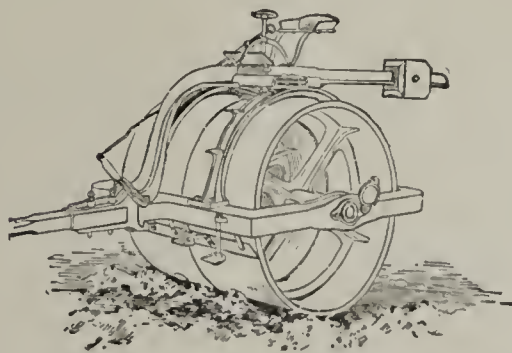
Analysis of Materials to Be Used.

Earth is the poorest of all road materials, aside from sand; earth roads require more attention than any other kind of roads, and, as a rule, receive less. With earth alone, however, a very passable road can be made, provided the principles of location, drainage and shape of surface, together with that of keeping the surface as smooth and firm as possible by rolling, be strictly adhered to. Clay soils, as a rule, absorb water quite freely and soften when saturated, but water does not readily pass through them; hence they are not easily subdrained. When used alone, clay is the least desirable of all road materials, but roads constructed over clay soils may be treated with sand or small gravel, from which a comparatively hard and compact mass is formed which is nearly impervious to water.

The more one improves the drainage of a sand road the more deplorable becomes its condition. Nothing will ruin it quicker than to dig a ditch on each side and drain all the water away. The best way to make such a road firm is to keep it constantly damp. Very dense shade trees alongside such roads prevent the evaporation of water.

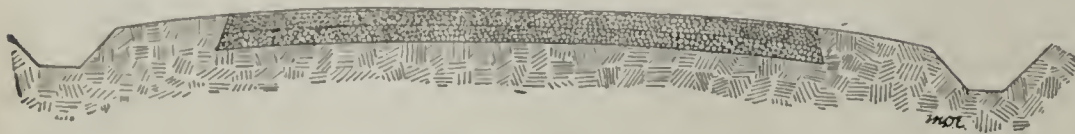
Highways built of poles or logs laid across the roadway are called "corduroy" roads, because of their corrugated or ribbed appearance.

Like earth roads, they should never be built where it is possible to secure any other good material; but it is frequently the case in swampy regions where other material is unavailable, that the road would be absolutely impassable without them at cer-



The Austin reversible horse roller, provided with roller bearings to lighten draft, and weight plates for increasing weight.

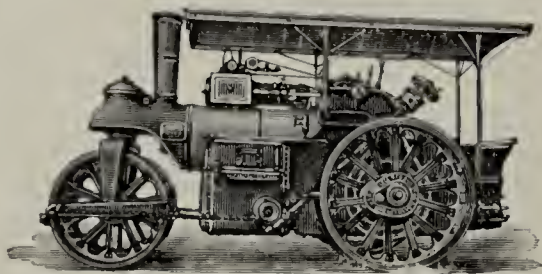
tain seasons of the year; hence it is well to know how to make them. Roads of this character should be fifteen or sixteen feet wide, to enable wagons to pass each other. Logs are superior to poles for this purpose and should be used if possible. The following suggestions in regard to the construction of corduroy roads are from Gilmore's "Roads, Streets and Pavements":



Cross-section of macadam road, showing a compact foundation of earth supporting a solid and durable stone surface. (Eldridge, Bul. 95, Dept. of Ag.)

"The logs are all cut the same length, which should be that of the required width of the road, and in laying them down such care in selection should be exercised as will give the smallest joints or opening between them. In order to reduce as much as possible the resistance to draft and the violence of the repeated shocks to which vehicles are subjected upon these roads, and also to render its surface practicable for draft animals, it is customary to level up between the logs with smaller pieces of the same length, but split to a triangular cross-section. These are inserted with edges downward in the open joints, so as to bring their surface even with the upper sides of the large logs, or as nearly so as practicable.

"Upon the bed thus prepared a layer of brushwood is put, a few inches in thickness, with soil or turf on top to keep it in place. This completes the road. The logs are laid directly upon the natural surface of the soil, those of the same or nearly of the same diameter being kept together, and the top covering of soil is excavated from side ditches.



Russell steam road roller, built in all sizes, and can be used for rolling roads, crushing stone, sawing wood, etc.

"Cross-drains may usually be omitted in roads of this kind, as the openings between the logs, even when laid with utmost care, will furnish more than ample waterway for drainage from the ditch on the upper to that on the lower side of the road. When the passage of a creek of considerable volume is to be provided for, and in localities subject to freshets, cross-drains or culverts are made wherever necessary by the omission of two or more logs, the opening being bridged with planks, split rails, or poles laid transversely to the axis of the road and resting on cross-beams notched into the logs on either side."

Suggestions as to Gravel Roads.

Although it is impracticable, and in many case impossible, for communities to build good stone roads, a surface of gravel may frequently be used to advantage, giving far better results than could be attained by the use of earth alone. Where beds of good gravel are available, this is the simplest, cheapest and most effective method of improving country roads. In constructing a gravel road the roadbed should first be brought to the proper grade. The surface of the roadbed should preferably have a fall from the center to the sides the same as that to be given the finished road, and should, if possible, be thoroughly rolled and consolidated until perfectly smooth and firm. A layer not thicker than four inches of good gravel, such

as that recommended above, should then be spread evenly over the prepared roadbed. Such material is usually carried upon a road in wheelbarrows or dump carts, and then spread in even layers with rakes, but the latest and best device for this purpose is a spreading cart.

If a roller cannot be had, the road is thrown open to traffic until it becomes fairly well consolidated; but it is impossible to properly consolidate materials by the movement of vehicles over the road, and if this means is pursued constant watchfulness is necessary to prevent unequal wear and to keep the surface smooth and free from ruts.

The work may be facilitated by the use of a horse-roller or light steam-roller. As soon as the first layer has been properly consolidated, a second, third, and, if necessary, a fourth, layer, each three or four inches in thickness, is spread on and treated in the same manner until the road is built up to the required thickness and cross-section. The last or surface layer should be rolled until the wheels of heavily loaded vehicles passing over it make no impression.

In many communities road stones do not exist; neither is it possible to secure good coarse gravel. Oyster or other shells can often be secured cheaply, and when applied directly upon sand or sandy soil, eight or ten inches in thickness, they form excellent roads for pleasure driving or light traffic. Shells wear much more rapidly than broken stone or gravel of good quality, and consequently roads made of them require more constant attention. In many cases they should have an entirely new surface every three or four years.

Macadam or Telford Thoroughfares.

The durability of roads depends largely upon the power of the materials of which they are composed to resist those natural and artificial forces which are constantly acting to destroy them. The fragments of which they are constructed are liable to be attacked in cold climates by frost, and in all climates by water and wind. If composed of stone or gravel, the particles are constantly grinding against each other and being exposed to the impact of the tires of vehicles and the feet of animals. Atmospheric agencies are also at work decomposing and disintegrating the material. It is obviously necessary, therefore, that great care be exercised in selecting for the surfacing of roads those stones which are less liable to be destroyed or decomposed by these physical, dynamical and chemical forces.

Siliceous materials, those composed of flint or quartz, although hard, are brittle and deficient in toughness. Granite is not desirable because it is composed of three materials of different natures—quartz, feldspar and mica—the first of which is brittle, the second liable to decompose rapidly, and the third laminable or of a scaly or layer-like nature. Some granites which contain



Transverse section of telford road with macadam surface. (Eldridge, Bul. 95, Dept. of Ag.)

hornblende instead of feldspar are desirable. The darker the variety the better. Gneiss, which is composed of quartz, feldspar and mica, more or less distinctly slaty, is inferior to granite. Mica slate stones are altogether useless. The argillaceous slates or clayey slates make a smooth surface, but one which is easily

destroyed when wet. The sandstones are utterly useless for road building. The tougher limestones are very good, but the softer ones, though they bind and make a smooth surface very quickly, are too weak for heavy loads; they wear, wash and blow away very rapidly.

Stone roads are built in most cases according to the principles laid down by John L. Macadam, while some are built by the methods advocated by Telford. The most important difference between these two principles of construction relates to the propriety or necessity of a paved foundation beneath the crust of

broken stone. Telford advocated this while Macadam strongly denied its advantages.

In building roads very few iron-clad rules can be laid down for universal application; skill and judgment must be exercised in designing and building each road, so that it will best meet the requirements of the place it is to occupy. The relative value of the telford and macadam systems can most always be determined by the local circumstances, conditions and necessities under which the road is to be built. The former system seems to have the advantage in swampy, wet places, or where the soil is in strata varying in hardness, or where

the foundation is liable to get soft in spots. Under most other circumstances, experienced road builders prefer the macadam construction, not only because it is considered best, but also because it is much cheaper.

Value of Wide Tires.

Tests recently made at the experiment stations in Utah and Missouri show that wide tires not only improve the surface of roads, but that under ordinary circumstances less power is required to pull a wagon on which wide tires are used. The introduction in recent years of a wide metallic tire which can be placed on any narrow-tired wheel at a cost of \$2 each, has removed one very serious objection to the proposed substitution of broad tires for the narrow ones now in use. Their increased adoption will do much to facilitate the work of keeping public highways in good repair.

THE WORLD'S IRON SUPPLY.

Mr. R. A. Hadfield, who was recently elected to succeed Mr. Andrew Carnegie as president of the Iron and Steel Institute, the most important organization of ironmongers, believes that the world's supply of iron ore is in danger of being exhausted. In a masterly address delivered when he was installed as the head of the Institute, at its annual meeting in London a few weeks ago, he dwelt with the utmost seriousness upon his fears that the supply of iron is fast being used up, and gave a pithy mass of statistics to illustrate his point. Coming, as it does, from a man who ranks as one of the world's foremost metallurgists, this warning carries with it great weight and furnishes a topic for manufacturers, consumers and economists alike. Mr. Hadfield cannot see any relief from the state of affairs he pictures. He simply presents the facts and leaves the question open for either suggestions or criticisms.

In substance, the English ironmonger's argument is that during 1904 about 150,000,000 tons of iron ore were used by the world—an enormous increase over preceding years. On this basis of increase, he estimates that by the year 2000, 450,000,000 tons will be required annually, and such consumption, if continued for a century only, would call for no less than 45,000,000,000 tons. Such a rate, he declares, would quickly exhaust all the known iron deposits of the world.

Mr. Hadfield begins his rather startling argument by pointing out specifically the position occupied by iron in the world's industries. The world's output of industries he places at between \$61,700,000,000 and \$70,000,000,000. Of this the manufactures amount to \$28,500,000,000. The United States produces \$9,900,000,000 of these manufactures and Great Britain \$4,380,000,000. Of these sums the direct metallurgical products in the United States amount to \$1,145,000,000 and in Great Britain to \$700,000,000. These amounts, Mr. Hadfield explains, refer to facts ascertained about ten years ago, and the grand totals will now be 25 to 30 per cent. greater. From the figures given he leads up to the prospective production of iron, and says:

"The immediate past of metallurgy has been great indeed in the enormous productive power which has been created, especially during the last twenty-five years; but should the nations of the East develop needs for iron and steel—and there is every probability that they may during the present century—then outputs which now seem to us immense will pale into insignificance. An Anglo-Indian, competent to judge, told me recently that it cannot be long before India must have 100,000 miles of railway.

"Supposing the whole population of the globe, now reckoned at over 1,500,000,000, or, say, even two-thirds of this number, eventually call for as much iron per head as is now used by each inhabitant of America and the United Kingdom—about 560 pounds per head—the demand would then rise to the figure of not far short of 300,000,000 tons per annum. This, too, does not take into account the increasing demand per head.

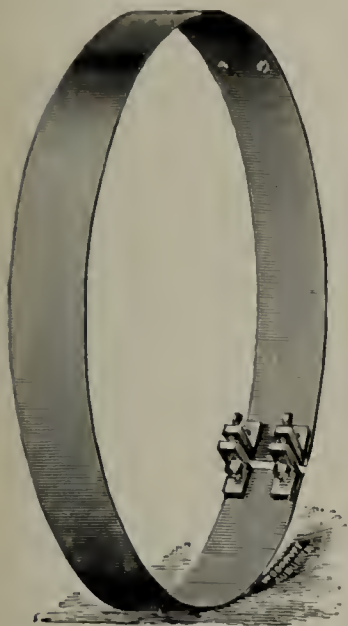
"If the growth of universal demand spoken of takes place, and there is every probability that it will, may not trouble then arise on account of the scarcity of ores? As there is no other equally useful metal in sight, husbanding of the world's resources will have to take place.

"Although this may seem a resuscitation of the Jevons theory, but applied to iron as it formerly was to coal, there must be good grounds for taking the view that, unless methods of economically working the vast sources of poor available ore are devised, at the end of the present century there will be an insufficiency of available iron ore, the seriousness of which it is difficult to estimate.

"As is well known, iron ore exists largely on the earth's surface, and the fact supports Sir Robert Ball's theory that the sources of this noble metal must have been originally from without and not within the earth, in which case supplies cannot reasonably be expected to be found below the surface. This is a view which, if correct, points to a narrowing of our supply.

"Many, no doubt, who read these remarks, will say: 'Does this concern us of to-day?' If a deficiency must take place in 300 or 400 years, what will then be said of us?"

Mr. Hadfield enjoys the distinction of being the youngest president the Iron and Steel Institute has ever had, and he is the first president from the Sheffield district.



The "Richardson" adjustable wide tire.

SMALL STREET TELEPHONE BOX.

In vicinities where the telephone business has not been developed to its full extent, all kinds of methods are resorted to to get the residents familiar with the use of the service. In

this manner the telephone soon takes the shape of a public necessity.

In the matter of street telephones, booths containing an equipment for public use are distributed throughout many of the cities of Europe, but those in present use are large and of expensive construction. Besides, they take up so much of the pavement that it is impossible to place them except where there is an abundance of room.

An American street telephone device, which has at least the merit of being compact and unobtrusive, is shown in the accompanying illustrations. These instruments, after having been given a prolonged trial, will shortly be placed in all the larger Ameri-



CURBSTONE TELEPHONE.

can cities. The apparatus represents the most approved style of instruments of the gravity type, which means that all the operations are practically automatic. The outfit, enclosed in a box, is mounted on a small post which brings the instrument at a convenient height for conversation while, as stated above, the device is of a very inoffensive appearance. It may be readily placed on the same post with a mail-box or even secured to a tree.

Where objection is made to the planting of the necessary posts along the streets of a municipality, it is proposed to make some compensation for the privilege by making the street telephone part of the police and fire-alarm system of the city. Policemen and other city officials desiring to report to headquarters, as well as calls for ambulances and other similar services, will be given immediate attention and messages of this character given right of way. For small cities, at least, this service will answer all the purposes of a costly fire-alarm and telegraph installation.

The patron, in making use of this instrument, conducts himself in the same manner as when making use of any public telephone. Taking down the receiver, he finds himself in com-

munication with "Central" and states his wishes. The desired connection having been effected, he is directed to deposit the toll in slots conveniently placed. This being done to the satisfaction of the central operative, the conversation proceeds.

These instruments have been given an experimental service in Bristol, Conn., and developed to the point that their use is now being extended to a number of cities. It is a matter of convenience whether the connecting wires are overhead or below the surface of the ground, but where the wires enter the



CURBSTONE TELEPHONE, COMBINED WITH MAIL-BOX.

box from the ground through the center of the post, the installation cannot be considered as objectionable in the least.

It is not contemplated that there will be much demand for long-distance connections of this character, as it has been shown by experience that the curbstone telephone will be used mainly for local calls, but the construction and quality of the equipment are such that it can be used for any character of service.

American Locomotives for Australia.—A recent consular report contains the following: In connection with the movement for promoting home industries in Australia, a statement made by the *Australian Mining Standard* is interesting. It says that the firm of I. Martin & Co., of Gawler, South Australia, offered to establish locomotive works in New South Wales and to supply the government with 120 locomotives at £5,360 (\$26,084) each. But the government commissioners recommended the purchase of foreign locomotives because they can be bought much cheaper, the Baldwin Locomotive Works, of Philadelphia, having recently offered to supply the locomotives for £1,236 (\$6,013) less for each locomotive than the offer made by the Australian firm. The bid of the Baldwin Works was on twenty locomotives, but it is to be presumed that they could make a still lower price on a contract for 120.

PROGRESS OF THE BLUE-PRINTING ART.

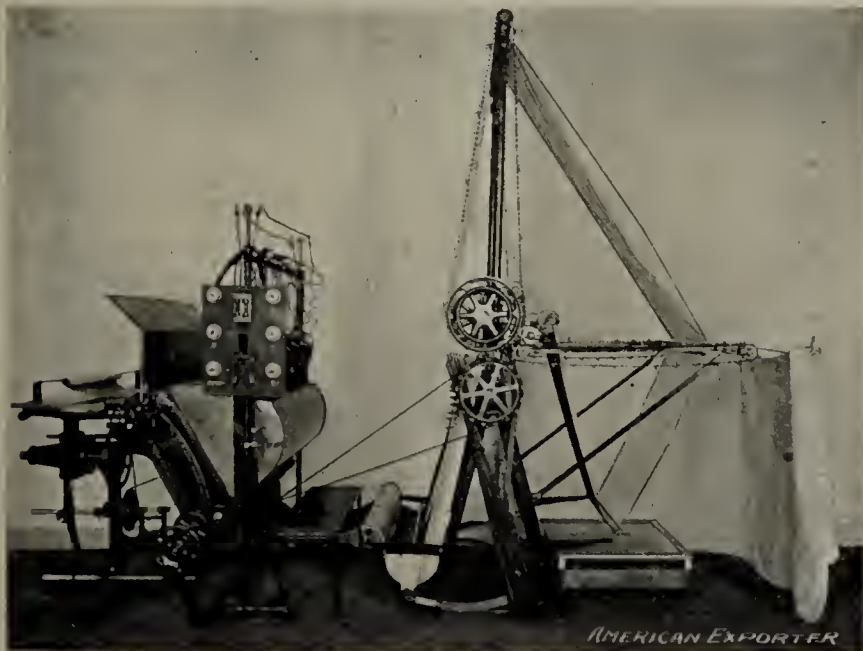
By George J. Jones.

Rapid construction seems to be the order of the day in all modern building operations and we constantly hear of some new record-breaking feat just performed or about to be attempted by some daring contractor. The feat of running up within a year such a structure as the "Flatiron" Building, in New York, would have seemed an undertaking not to be thought of a decade ago, and yet it is regarded at this time as quite an ordinary performance.

In order to accomplish such achievements as this, it is necessary to resort to every device which may be the means of saving time, and in this connection what might on the face of it seem to be a very humble factor is in reality a very important one. In the matter of these remarkably strenuous undertakings, the blue-print has played a considerable part. In the not far distant past the working plans of an engineering achievement were copied by hand at a very great expense of time and money. Large corps of draughtsmen were necessarily employed on the work, and only as many copies made as were regarded absolutely necessary. These could, therefore, be placed in the hands of only a few of the parties concerned. Besides the time consumed in their making, there was also the loss of time on the part of the workmen, who were compelled to interrupt their work at frequent intervals and journey to some shed or office where the drawings might be consulted. In many other ways the work of construction was delayed by the lack of these drawings in sufficient number.

The first step in the improvement of these methods was the origin of the process by which such plans were copied by photography. It was found that copies could be made by exposing the originals to sunlight with a sheet of photographic paper beneath them, but this, too, was soon found to be objectionable, since the capacity was limited by the whims of the weather. It was possible to make the prints only when the sun shone. The uncertainties of the orb of day made a demand for some other process which could be relied on with greater certainty.

One of the leading electrical companies developed a process by

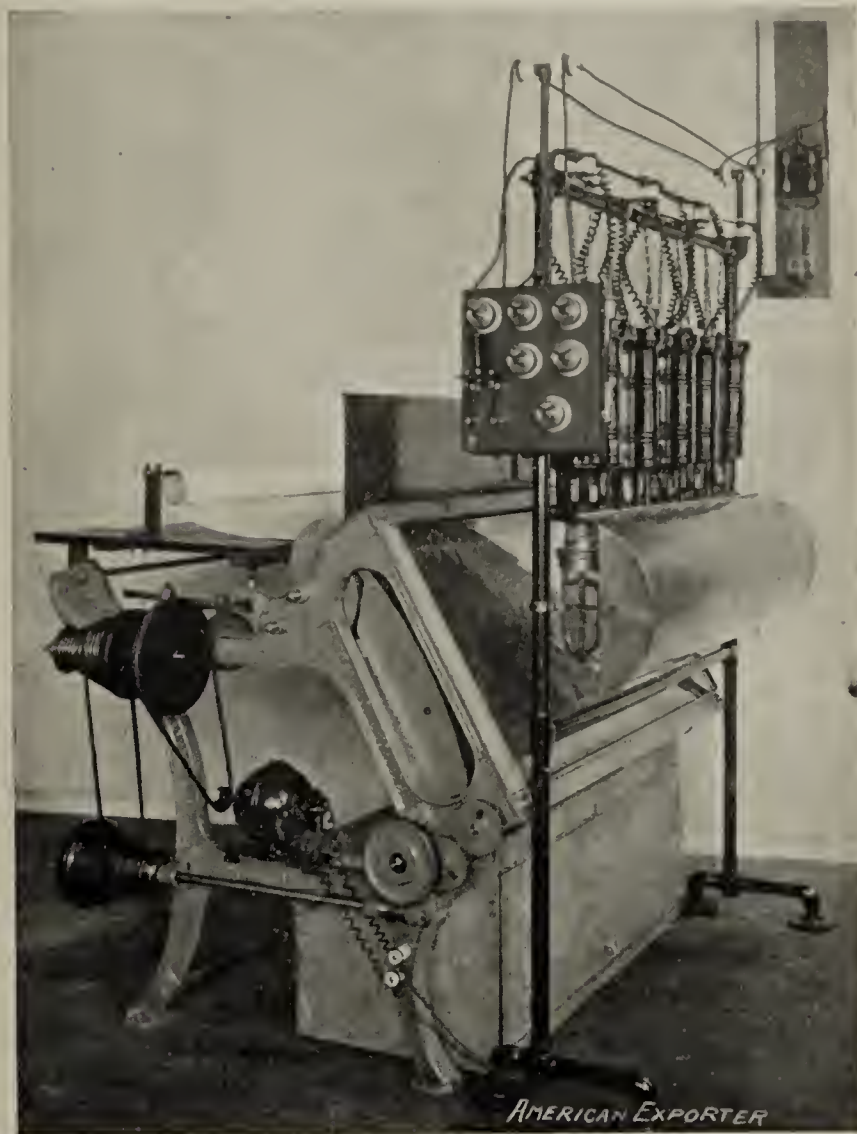


COMPLETE APPARATUS FOR MAKING AND FINISHING BLUE-PRINTS.

which the prints could be made by electric light. The particular method referred to was very expensive, as it required a great number of very powerful lights. This concern spent considerable

money in fitting out a large establishment, but it was such an imposing plant that it proved financially unsuccessful.

The next step was a cylindrical device with a powerful light moving vertically inside, thus exposing all the parts of the paper to the same amount of light. This answered a great many pur-



THE LATEST BLUE-PRINTING MACHINE.

poses, but the latest and most promising device is a small and compact machine which crowds into one continuous operation all the various processes formerly required. The blue paper and the drawings are started through this machine at one end and issue from the other in a finished condition. In a few minutes all the processes of printing, washing and drying have been performed in a manner superior to the older and slower methods.

This process is the combination of the work of two different inventors pursuing somewhat the same lines. The Franklin printing machine was perfected only a few months ago and placed on the market by a Philadelphia firm engaged in the manufacture of scientific and photographic instruments. This was found to be superior in many respects to most of the other machines designed to accomplish the same purpose, and had some advantages in simplicity of construction and operation. It is needless to go into any detailed description of its various parts, for any one familiar with blue-printing in only a small degree will get a good idea of its operation from the accompanying half-tone cuts.

About the same time another inventor was struggling with the matter of simplifying the business of making these blue-prints, and he reduced it to a mechanical process entirely. With this machine the blue-print is taken as it comes from the printing frame or machine, and simply hung over a rod placed on the two clips of a chain-carrier. Here the coated side only of the print is subjected to the action of a number of tiny streams of water,

which have the effect of thoroughly washing all the chemicals from the paper without the necessity of wetting the other or uncoated surface of the paper. This greatly facilitates the drying operation which takes place a little later. The print remains under the streams of water until the next is finished, and then print number one is moved up on the carrier and its place taken by the fresh print. As number one moves along, it passes between two rollers, which remove all surplus water very effectively. As each fresh print is put in its place, the others are carried along through successive stages, passing up and over the machine and down the back, never leaving the rod on which they were first placed; each finally takes its place on the rack, where a few minutes' exposure to the heat of the lamp dries it thoroughly. This combination is shown in the second illustration. When it is considered that here is the entire plant for the making and finishing of blue-prints, it will be realized that the machine has at least the merit of compactness.

With the old process of making these copies by hand, an imposing array of tanks was required, necessitating much floor space and requiring considerable sloppy work. The man engaged in the printing could not participate in the other process, for the reason that his hands must be kept clean for the manipulation of the paper. With the new arrangement one man does the whole work from start to finish. Not only is the process continuous, but there is almost no limit to the size of the prints which can be made. In fact, the capacity of the paper-maker is the only restrictive element, for this combination will handle an entire roll of paper, carrying it through the various processes without a break.

AN ARC LIGHT WITH A GAS FLAME.

An electric arc light which gives out a powerful gaseous flame is a recent American invention that is attracting attention. The plan by which it works is a direct departure from the illumination produced by the ordinary arc lamps now used to illuminate the streets of most cities.

As is well known, in the regulation type of arc lamp the illumination is produced by the passage of the current from one carbon to the other, thus creating an arc. Heretofore, in the construction of the carbon, the effort has been made to secure one which would be indestructible; with this end in view, the enclosed carbon was evolved. This greatly increased the carbon's life.

In the new lamp, which is called the "flaming arc," that feature of the carbon's construction referred to above is entirely changed. Its composition comprises the secret of the invention and materials more volatile than carbon are made use of. When the electrical current is passed through these materials, a large volume of luminous vapor is given off, assuming the nature of gas in combustion. The new light is said to be far more brilliant than the more familiar form of arc lamp.

A writer in the *Electrical World and Engineer*, in discussing it, says: "In the flaming arc, the thing is accomplished which various experimenters have been trying to reach in work with vacuum tubes, namely, the production of vividly luminous vapor giving a spectrum which, in virtue of its being discontinuous, does not necessitate a vast amount of wasted work in the production of radiations useless for illumination. The result has been the production of arcs of immense efficiency, giving two or three

candle-power per watt. The gain in efficiency is, unfortunately, accomplished by the inconvenience of a considerable volume of smoke resulting from the oxidation of the free vapor or from particles of oxide thrown off from the electrodes.

"The arc produced is enormously brilliant, of a good white color, better defined than the ordinary flaming arc from more volatile materials, and wonderfully efficient—running up to nearly three candle-power per watt. This much can be said with certainty, that this and other arcs of the 'flaming' type are working along the only line that gives much hope of very high efficiency—the production of light from gaseous radiants—which give therefore a spectrum that is discontinuous and hence not necessarily limited in efficiency by the temperature alone. The practical objections to such arcs are in the main those due to the smudge they raise. However, at the efficiency known to be attainable along these lines, it will probably pay to go to considerable trouble in taking care of this difficulty. To be sure, there is small chance of enclosing flaming arcs, but far too much efficiency is gained to be offset by the often exaggerated objections to open arcs. It will take a deal of experimentation to get the new arc in first-class commercial shape, but considerable has been done already."

NEW FIREPROOF LUMBER.

It is worthy of note that asbestos building lumber, made from asbestos fiber and specially prepared asbestos cement, is coming into large use in the United States. It is used for fireproofing buildings, electric railway cars and in the manufacture of electrical instruments subjected to heavy currents. The lumber is made in sheets forty-eight by forty-two inches, and in any thickness up to one inch. Two or more sheets can be riveted together if thicker material is needed. Owing to the use of cement, metal-working tools are necessary to cut the material. The lumber can be painted or varnished. The material has withstood severe tests with fire and electricity by the National Board of Underwriters, and has proved its efficiency. The New York electrical street railways have used this material in the construction of their new steel cars with entire satisfaction.

Another fireproof material called magnesia lumber is also being used, it, too, having withstood the practical tests demanded by insurance men and builders. This material is made by permeating millboard with a solution of silicate of soda and bicarbonate of magnesia, and subjecting the treated material to heavy pressure to force out the water. This lumber can be worked with cold tools and is much lighter than the asbestos lumber.

Deep Water Channel for Tampa.—Tampa, Fla., is rejoicing over a \$340,000 appropriation for a deep-water channel which will permit the large ocean-going steamships and merchantmen to reach the city docks. Port Tampa, nine miles from the city, has heretofore been the limit for ocean craft, thus necessitating the use of lighters to transfer goods to and from the city. This involved great expense and loss of time. The value to the city can scarcely be estimated. Already the ninth in rank among the great importing cities of the country, with facilities for receiving the merchant marine, the wealth of ocean commerce, at the city docks, Tampa will easily advance still higher on the commercial ladder.

WALL PAPER REMOVED BY STEAM.

Steam as a means of removing old wall-paper is made use of in an American novelty which is just being placed on the market. Many devices for this purpose have been worked out, but few of them have stood the test of trial. In the present instance the steam is generated in a boiler by means of a gasoline burner and applied to the wall through the agency of a hood in the hands of the workman. The connection between these parts consists of a rubber tube.

In the making of a contract for papering the paper-hanger is always more or less in the dark, because he cannot calculate with any certainty on the amount or the tenacity of the old paper to be torn or scraped from the wall. He may base a calculation on a single or double covering, but when the workmen commence to scrape they may find half a dozen, which means that the work of removal will be very slow and laborious. The processes generally followed are tedious. In some cases the paper-hanger merely tears away the portions of the old paper which are loose, thus leav-



REMOVING WALL-PAPER BY STEAM.

ing an uneven surface. In others water is sprinkled over the surface by means of a sponge, but it is necessary to wait until it has soaked in. Results are slow and somewhat incomplete, as the application of moisture is not uniform and the paper is removed only in parts.

With the new apparatus alluded to, which is shown herewith, after a steam pressure is obtained within the boiler, it is merely necessary to hold the hood to the wall a short time, when the paper peels off easily under the action of the workman's plow.

The outfit is not too large to be easily portable. The gasoline tank holds a sufficient quantity of fuel for half a day's operation, while the water tank holds four gallons, sufficient for the same period of work. The time of steam application varies with the amount of paper on the wall. Ordinarily, it is said that a few seconds will suffice, but a three-minute application has, it is claimed, penetrated a dozen coverings of paper, one over the other. The claim is also made that it is hygienic, the heat of the steam killing germs and vermin. This would depend, of course, upon the length of time the application of the steam is kept up.

AMERICA TO MAKE FRENCH MOTOR CARS.

The superior quality of American machine materials and workmanship is strikingly emphasized in a deal which has just been closed by the American Locomotive Company. By this arrangement this company will manufacture in the United States the Berliet automobile, one of the best-known French cars. Although one or two cars of foreign design are now built here in part, the recent deal will be the first instance of an American concern making a foreign car with American labor, complete in every detail.

Plans are now under way by the American Locomotive Company for the erection of a specially equipped plant for the manufacture of the Berliet machines at Providence, R. I., adjacent to the Rhode Island Locomotive Works. At the start the output of the new plant will be about 200 cars. The first machines are to be of 40 and 25 horse-power. Later, the company will manufacture automobile trucks for heavy transportation use.

In the June number of the AMERICAN EXPORTER an article on the American Motor Car Industry explained in detail the reasons for America's rapid strides in the manufacture of automobiles. One is that the machines made in the United States are much cheaper than European motors. Another is that their quality is just as good, and in many cases better. A high-class European motor car costs about \$9,000, while for \$5,000 it is possible to buy an American machine of equal power. In this simple statement there is embodied a fact which applies not only to automobiles, but to every variety of machinery made in the United States. It is because of the cheapness and superior quality of American goods that our export trade has increased so remarkably within the last quarter of a century.

With the automobile industry, however, the gains have been phenomenal within a period of only three years. Statistics recently prepared by the United States Department of Commerce and Labor show that in 1902 the total exportation from the United States of automobiles and parts thereof was \$948,528. In 1903 the total had increased to \$1,207,064, and by 1904 the total was \$1,895,605. For the ten months of the fiscal year 1905 the exports were \$1,876,063, thus indicating a record of over \$2,200,000 for the complete year.

The United Kingdom and Canada take about three-fourths of the automobiles and parts that are exported from the United States. During the fiscal year 1904 automobiles and parts thereof of domestic manufacture were exported to the value of \$1,895,605, of which \$1,020,681 went to Europe, mainly to the United Kingdom, \$498,799 to North America, principally to the Dominion of Canada, and \$376,125 to other countries.

That the automobile is no longer an experiment or a machine merely for pleasure is a fact strongly brought out by these figures. Motor cars for truckage and heavy hauling in general have proved practicable and far superior to horses. In France the automobile has already supplanted the horse in a large degree, as the following figures show: From 1903 to 1904 the number of horses in Paris dropped from 91,016 to 90,147, a difference of 869. In 1901 there were 133,892 horses in Paris, making a decrease in 1904 of 43,745, as compared with 1901. The automobile is the vehicle of the present and the future. The history of its development is one of the strongest indications of America's industrial progress.

Recent contracts filed by the Allis-Chalmers Company include a fifty-ton copper smelting plant for a Chilean mining company.

A BARREL WITHOUT A BULGE.

What promises to be a very startling and important innovation in the cooperage industry is taking definite form in this country and will no doubt make itself felt very extensively abroad. It is a new process of making a barrel which has many advantages over the old form. Its most striking characteristic to the layman is that it is a barrel without a bulge and with wire hoops. The claim made for the new article is that it is more economical in its manufacture than the old form, as well as easier and cheaper to transport in its knocked-down shape; at the same time it is so tight that it will carry cement and similar commodities without lining. After having been shipped crated in parts, the barrel can be put together with great rapidity by unskilled labor, the workmen simply making use of a device called a "former." The inventor of this barrel and the process of its manufacture is Frank Alexe, formerly engaged in the publishing and advertising business in New York.

A clear understanding of the barrel and its process of construction can be gleaned from the accompanying illustrations. The staves and headings, after coming from the sawmill where they have been cut into proper width and length, are sent to the kiln house, where they are kilned "bone dry." The pieces are then run through the molding, crozing and stapling machines, when they are distributed on tables for wiring, which operation is performed by boys. The wires replace the old-fashioned hoops and are much stronger, having a breaking strength of 2,200

pounds to the inch. These preparations, together with that of the formation of the heads, are done by unskilled labor entirely. They are packed flat in bales for shipment and in this shape are forwarded at a saving of 90 per cent. in freight. In the knocked-down shape they occupy one-tenth the space of the finished barrel, and when set up the saving of space represented by the elimination of the usual bulge is said to be 20 per cent.

"I put 1,000 barrels in the space now required for 100 barrels of the old-fashioned kind," said Mr. Alexe to a representative of the AMERICAN EXPORTER.

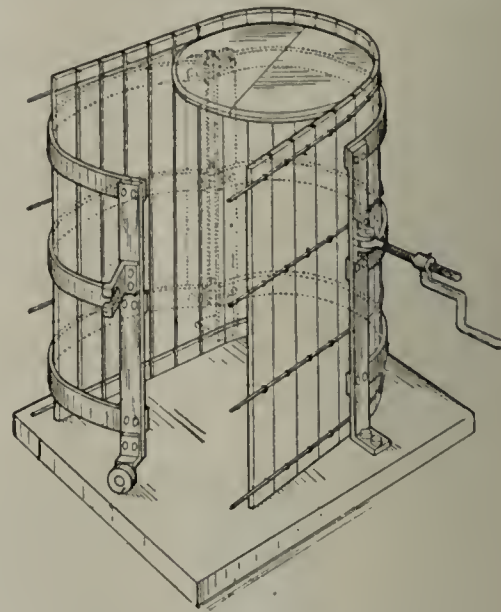
"When shipping barrels filled with flour or cement, I put 300 into the same space occupied by 200 barrels of the bulged kind, my barrels containing exactly the same amount of material. In other words, I save 20 per cent. in space, or 10 per cent. in weight when the barrels are filled, and 90 per cent. when empty. In handling my crated barrels or in carrying them from one place to another, two men can do the work in the time it would take twenty-five men to carry the same number of bulge barrels. Another important point is that I can get insurance on goods shipped in my barrels 50

per cent. cheaper than it can be obtained on goods in the old-fashioned barrel. All told, there is a saving of 90 per cent. in the cost of carriage. In short, they are 25 per cent. lighter than the bulge barrels, occupy 20 per cent. less room when filled, are 25 per cent. stronger by test and hold their contents without paper lining."

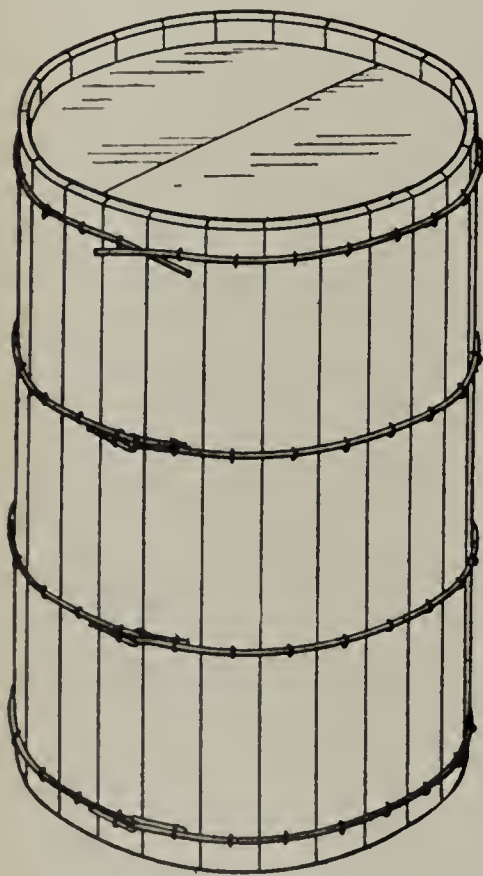
Mr. Alexe decided to first put his invention to a practical commercial test by manufacturing it in England, where he would be compelled to import the necessary lumber from Norway and Sweden. After this was on a successful basis, the Belgian rights to the patent were sold to the largest barrel factory in that country, and probably in the world. The results have been so gratifying that the inventor is now planning for operations on a large scale.

For the United States and Canada a syndicate is being formed with a capital of \$1,000,000. Six factories will be established, four of which will be in the United States, each having a capacity of 10,000 barrels a day. The product of these factories will be sold to consumers in a knocked-down condition and apparatus for completing the barrel furnished to each buyer. The latter devices will not be sold, but will remain the property of the manufacturer. The number placed in the hands of each consumer will be proportioned according to the number of barrels which he agrees to take daily.

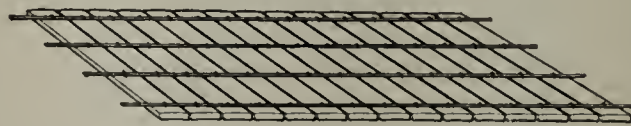
The final setting up of the barrel is an operation performed by boys or other unskilled labor, the operation being done with



METHOD OF SETTING UP THE BARREL.



THE ALEXE BARREL, COMPLETE.



A BARREL READY FOR SHIPMENT.

the "former" entirely by hand. Five of these persons, it is claimed, can readily set up one thousand barrels a day, an operation which ordinarily requires sixty practical coopers.

Replanting American Forests.—The replanting of forest lands which have been stripped of their timber is being systematically carried on in America. The great railway companies are planting each year thousands of trees to furnish them with a future supply of ties. Forest reservations are being set aside by many States. The catalpa tree is being cultivated in Kansas with success. A northern New York lumber firm recently imported from Germany 323,000 seedling spruce trees which it will plant upon its lands in the Adirondack Mountains. As the German spruce grows rapidly, it will prove a valuable move for the Adirondack land owners. Many timber cutters now restrict the cutting of trees to certain sizes and thus stop the waste that has been going on for years

STANDARD SIZES FOR WAGON WHEELS.

The question of adopting standard measurements for all parts of farm wagons is now being considered by the National Wagon Manufacturers' Association of the United States. This step is of the greatest importance to the dealer and buyer, as well as to the producer, for with a series of universal measurements it would be a simple matter to refit any vehicle in any part of the world.

In taking up the proposed changes, the Association first considered the height of wheels for one and two horse wagons and header and farm trucks, but not for log or special wagons. Ninety-one out of ninety-four manufacturers gave their unqualified approval to the plan, and the following heights for wheels (measured without the tire) were agreed upon as standard measurements: Front wheels, forty-four inches, rear wheels, fifty-two inches; front wheels, forty inches, rear wheels, forty-eight inches; front wheels, forty inches, rear wheels, forty-four inches; front wheels, thirty-six inches, rear wheels, forty-four inches.

It was agreed among the members of the Association that these heights possessed every desirable advantage in strength and ease of draft. The new measurements, says Mr. E. W. McCullough, the secretary of the organization, will be furnished to the trade as soon after July as shop conditions will permit. The secretary then adds:

"The adoption of these standards will permit the manufacturer to get his wheel materials, both wood and iron, with less delay and will enable him to supply his trade more promptly.

"It will also benefit the jobber and dealer in requiring them to provide less storage space than heretofore and in reducing their investment in wagons.

"With the consumer the benefit will be felt by reason of his wheels being standard any place in the country, so that repairs can be readily and economically obtained.

"This change, being made in the gradual manner proposed, need cause no disturbance in stocks now being carried, but with all concerned will be made effective because of the money value attached to the economy of it and the convenience and saving of time.

"The encouragement given this first attempt to bring to reasonable standards such important parts as wheels (of which there has been so great a variety), no doubt will lead to similar undertakings in other directions for the mutual benefit of the manufacturer, his customers and the consumers."

A New Compass Card.—A new compass card has been designed by Lieut.-Commander S. W. B. Diehl, U. S. N. The card omits the present points and is graduated in a circle of degrees continuous from 0 degrees at the north to 360 degrees. The circumference of the card is divided by ten degrees with heavy lines on the rim and by the necessary geometric figures on the card. Each ten degrees is subdivided into half and quarter divisions properly marked.

Every fifth degree line of the graduated circle between the ten degree divisions is marked in figures indicating its proper number from 0, or north. The cardinal and intercardinal directions are emphasized in geometric figures.

The object of the proposed change is to omit the present system of points and fractions and to use degrees solely. The present card consists of points and degrees. The conversion of one into

the other is a natural result of the presence of both, but it is not a necessity, as would be speedily recognized were the points omitted. Accuracy requires expression in degrees for courses, bearings and compass errors, and not in points, the use of the latter being a duplication of work.

The present card of 360 degrees is divided into 32 points. One of these is equal to 11.25 degrees; a half point is equal to 5.625 degrees and a quarter point to 2.8125 degrees, the graduated circle being marked in degrees in each quadrant from 0 degree north and south to 90 degrees at east and west.

In the proposed card the 360 degrees are divided into 36 divisions, so that one division is equal to 10 degrees, half a division to 5 degrees and a quarter division to 2.5 degrees. Each division is a multiple of ten and it is further stated that the easterly and westerly deviations are far more easily calculated than in the present system.

The proposed change would give courses and bearings in degrees instead of points. Some changes would also have to be made in the azimuth and other tables, but others could be entirely eliminated. It is claimed on behalf of the proposed card that its marking as described would result in greater accuracy in navigation, so far as the compass goes.

House Roofing and Painting Made Easy.

The Ruberoid is shipped in convenient form and requires only export trade are Ruberoid roofing, a strong and durable covering for all sorts of buildings, and Lythite, a unique paint. The latter is a dry powder, which, when mixed with water, produces a perfect paint. It is practically indestructible, is economical and especially valuable for use in tropical countries.

Ruberoid roofing has an international reputation, and architects, engineers and builders have accepted it as one of the standard products. For years it has successfully withstood the heat of the tropics, as well as the Arctic ice. Its manufacturers guarantee it not to run at any heat, as it contains no tar or asphalt. Its application to the roofs or sides of buildings is extremely simple.

The Ruberoid is shipped in convenient form and requires only a short time to apply; the preparation forms a permanent covering, not affected by any kind of weather. Owing to its simplicity and durability it has been adopted by several governments for use on public buildings, military structures, etc. It is just as well adapted for covering the unpretentious cabin as the most expensive mill, factory, railway building or residence.

Lythite, the "powder paint," is manufactured in pure white and many other handsome shades. It is said to cost only about one-fourth as much as the regular oil paint, and the claim is made that it is fully as serviceable. The convenient manner in which it can be handled is one of the chief features in its favor, especially for those living in tropical climates. The powder is simply mixed with cold water, and then all is in readiness for its application.

These two articles are handled by the Frank S. De Ronde Company, a well-known firm, which controls the outputs of many American factories and does a general export business. The company pays particular attention to supplying goods in all countries where Spanish is spoken, and in the Far East as well.

Catalogues, published both in Spanish and English, explaining the methods of using Ruberoid roofing and Lythite, and giving full price quotations, will be mailed upon writing to the company's offices at No. 46 Cliff street, New York.

BOILER-RIVETING MACHINE FOR EXPORT IMPROVEMENT IN MUFFLER CONSTRUCTION

The Allen portable pneumatic boiler riveter, designed to combine the features of hand-work with increased speed, is capable of driving rivets with great rapidity. The apparatus can be suspended vertically or horizontally and is equally applicable to operate on the outside, top, or at any angle of the shell.

It works on the principle of hand-work, forming the head of the rivet by a succession of rapid blows around the rivet until the desired shape of the head is obtained. It is claimed that it will drive a 1¼-inch rivet in six seconds.

As shown in the illustration, the riveter consists of two levers, having at one end a pressure cylinder to open and close the levers. At the other end is the riveting-machine on one arm and a suitable die with counter-weight attached to the other. The long arms of the levers are capable of reaching a rivet 48, 72, 84 or 96 inches from the edge of the plate, so as to operate upon the circular seams of a boiler.

The riveting-machine proper consists of a cylinder, with the hammer-head or die attached to the end of the piston-rod, capable of being easily changed to adapt the machine for different sizes of rivets and heads. The valve is operated directly by the pressure in the cylinder without extra gearing, and so arranged that the length of the stroke regulates itself automatically to correspond with the gradual reduction of the end of the rivet as the head is formed.

The machine is operated with an atmospheric pressure of from 30 to 40 pounds to the square inch. In operation, after the hot riveter is inserted, the die and weight are moved over its head and pressure admitted to the cylinder *A*. This is accomplished by moving the rod *B*, closing the long ends of the bars and pressing the nozzle of the riveter upon the plates over the rivet, thereby holding the plates together by a pressure of about 2,000 pounds. The operator then presses upon the spring valve *D*, thereby admitting the air pressure into the riveter to operate its hammer; it thus forms a rivet made by a succession of rapid blows.

Being portable and suspended from a traveling carriage, it can be readily moved to any part of the shop. This tool is also adapted for house range tanks and will drive a double seam of ¼-inch, ⅜-inch or ½-inch rivets, as used in these tanks, in twenty-five minutes.

For the description of this interesting invention we are indebted to a recent catalogue of machines for all riveting purposes issued by Mr. John F. Allen, 370-372 Gerard avenue, New York City.

Every automobile and almost every gas engine is equipped with a muffler, but it is evident to the most casual investigator that many automobiles are not effectually muffled. A muffler having some novel features is that being put out by the Motor and Manufacturing Works Company, of Ithaca, N. Y.; it is known as the ejector muffler, being built somewhat on the lines of the ejector, the construction of which is more or less well known.

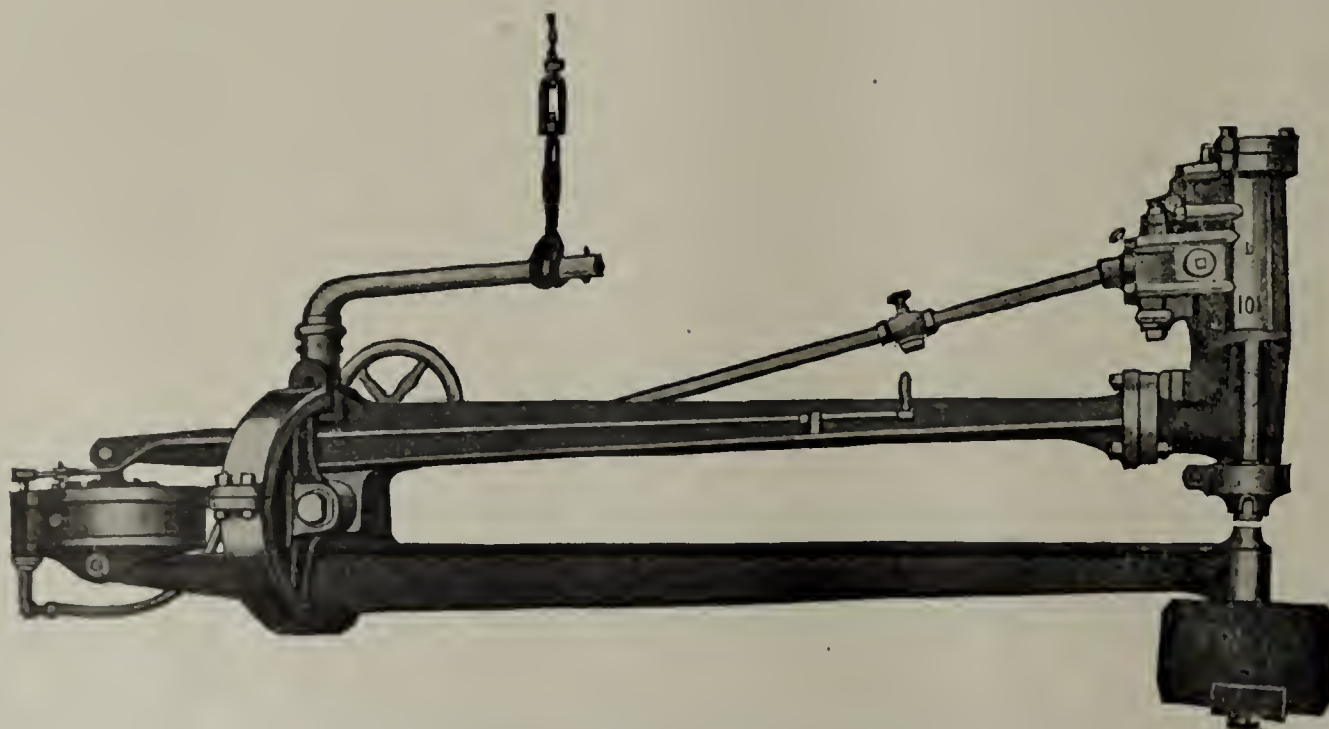
The body of the muffler consists of a double cylinder, one within the other, the intervening space being filled with asbestos. The ends are closed by flanged heads. The gas entering the muffler is along a central pipe and through the sheet-metal cones, which are nested one within the other as usual. The movement of the gases along the tortuous passages thus presented retards the flow of gas without throttling, being kept moving by means of the suction action of the nozzle at the far end of the central pipe.

The pressure in the muffler is reduced, before the exhaust valve closes, to a point slightly below that of the atmosphere, and the noise of the explosion is reduced to a minimum. With this construction the troubles resulting from back pressure are said to be eliminated. The metal used in the nest of the cones is quite thin and the possibility of the bales becoming choked with deposits of carbon is very remote; at the same time, the construction of the device is sufficiently substantial to render it proof against muffler explosion.

IRON AS A RIVAL OF STEEL.

Mr. James P. Roe, superintendent of the Glasgow Iron Company, asserts that iron outlasts steel, in a paper read before the American Institute of Mining Engineers, at Washington, on "The Production and Characteristics of Wrought Iron." During the discussion several members stated that actual use has proved that wrought iron is, for several reasons, preferable to steel for many uses, notably for sheeting, wire and piping.

Mr. Roe stated that thus far wrought iron has been made principally by puddling in small quantities by labor of the most exhausting kind, while his own mechanical process of puddling produces the metal in very much larger quantities—proportionately from 4,000 to 6,000 pounds, where the usual process produces only from 180 to 200 pounds. This new process, he said, does away with the use of special skilled labor, handles all material by machinery in large quantities; and that, therefore, it will be possible by the process to convert pig iron into wrought iron at about the same cost as to convert special grades of pig iron into the mild steel which is the basis of all structural material to-day.



ALLEN PORTABLE BOILER RIVETER.

DEVELOPMENT OF THE WASHING MACHINE.

In this strenuous age of inventions and improvements the washing-machine has approximated perfection in its development. From a device which was once looked upon largely as a curious experiment, it has gradually been perfected, until now it governs the laundry business and is an indispensable household article. That washing-machines cleanse clothes much more effectually than can be done by hand is a fact, the truth of which was long since demonstrated.

The method of operating these invaluable contrivances is so simple that a child can do the washing of an entire family. The soiled clothes are first soaked in soft water all night. In the morning, after being wrung thoroughly, they are placed in the machine, which is then filled with boiling soap-suds. Next comes the simple operation of washing, which consists merely of working the machine for ten minutes. It is as easy as making ice-cream, and there is no wear and tear on the clothes, which are not injured by the mechanical process.

Ranking with the highest grades of washing-machines are those produced by the Benbow-Brammer Manufacturing Company, of

kiln-dried, with all joints tongued and grooved and the inner sides and bottom deeply corrugated. The lids are of double thickness and fit tightly on the tub. This, in addition to the fact that the



THE "B. B." ROLLER GEARING ROTARY WASHER.

St. Louis. This concern manufactures seven varieties of machines, all of which are models of construction and finish, durable and easily operated.

The "B. B." washer, which is shown herewith, has been on the market for a number of years, and is well known. Many thousands are in use and are giving much satisfaction. The gearing employed is strong and easily operated. For the "Schroeder" machine, whose patent has been sustained by six circuit judges of the United States, the manufacturers make the claim that it is the first successful rotary washer to be placed on the market. The gearing is simple in construction, is strong and operated with the utmost ease. The roller end-cogs on the double gear or cylinder are a vast improvement over the solid end-cog gear formerly furnished. This change eliminates all breakages and practically all friction. The "Brammer" rotary washer is another design whose practical efficiency has been proved by the experience of a multitude of purchasers.

These three machines—a trio of "trade-winners"—are all constructed of the best Louisiana red cypress lumber, thoroughly



THE "BRAMMER" IMPROVED ROTARY WASHER.

gearing is so attached to the lid that it allows no escape of steam, gives practically a steam-tight tub.

The Benbow-Brammer Manufacturing Company is one of the pioneer washing-machine concerns, and is in a position to furnish full information to those interested in the subject.



THE "SCHROEDER" ROLLER GEARING ROTARY WASHER.

ELECTRIC LIGHTING AND POWER UNITS FOR EXPORT.

In the not far distant past the ordinary electric lighting and power plant comprised an engine built by one manufacturer and a dynamo built by another. The responsibility for successful operation was thereby divided, while the difficulties in the way of placing an order and installing the equipment were greatly increased. Even at the present time there are comparatively few

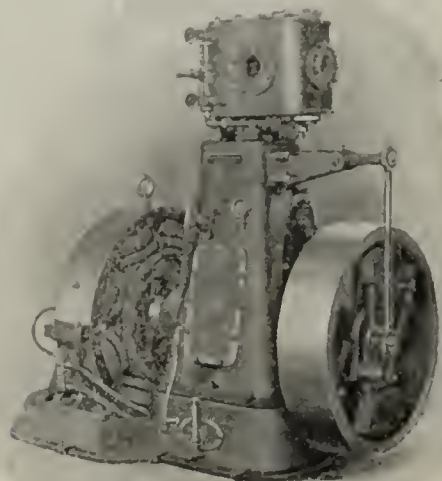


FIG. 1.—25-KILOWATT GENERATING SET.

concerns in America that build both the engine and the generator. Prominent among these is the B. F. Sturtevant Company, of Boston, U. S. A., whose name is almost synonymous with "blower," although its reputation in this line has been partially obscured by the magnitude of its business in engines, motors and generating sets.

However, this company for years has made a specialty of high-grade generating sets, with an engine and generator designed each for the other and combining maximum efficiency with minimum space and weight—elements which are particularly essential in machinery built for export. It now catalogues no less than thirty-six different sizes and types of units, ranging from 3 to 100 kilowatts. Each is absolutely complete in its parts, being carried upon a bed-plate, which is common to both. The size and weight of all but the larger sizes are such as to permit of export shipment without separation of parts, so that the machine stands ready for operation as soon as it is unpacked.

This line of machines is represented by three essentially different types, which are illustrated by the accompanying cuts. In Fig. 1



FIG. 2.—100-KILOWATT GENERATING SET.

is displayed the vertical engine type, ranging in capacity from $7\frac{1}{2}$ to 50 kilowatts, in weight from 2,000 pounds to 10,500 pounds, and designed for operation at 90 pounds steam pressure. The steam is controlled by a balanced piston valve, the crank is forged in one piece with extra large pin, the cylinder lagged with Russia iron and all bearing surfaces are adjustable.

Both the vertical and the horizontal engines are distinguished by two essential features: First, the watershed partition which is introduced between the cylinder and the frame absolutely prevents water from the piston-rod stuffing-box reaching the interior of the frame, which is entirely enclosed by means of removable plates; second, a system of forced lubrication of oil under a pressure of about fifteen pounds provides at each bearing a film of oil between the surfaces and very materially reduces the friction. A mechanical efficiency of fully 95 per cent. has been obtained by this arrangement. In all engines the speed is regulated within one-half of 1 per cent. between no load and full load by means of a Rites governor.

All the generators are multipolar. They are capable of carrying 50 per cent. momentary overload without shifting of brushes or flashing at commutator, and 25 per cent. excess for two hours without sparking or undue heating. The temperature increment, after ten hours' full load run, never exceeds 40° C. They are very carefully designed to meet conditions of continuous operation.

The vertical compound sets, ranging from $17\frac{1}{2}$ to 100 kilowatts, are shown in Fig. 2. These weigh, respectively, from 5,600 to 22,000 pounds, and are intended for operation at pressures ranging from 100 to 150 pounds. They were designed under the rigid specifications of the U. S. Navy Department; the 100-kilowatt set has shown a combined efficiency of 86 per cent. on a steam consumption of only 31 pounds per kilowatt hour. It occupies a remarkably small space, being only 115 inches in length, 70 inches in width and 94 inches in height. The entire design is of the highest grade; the cylinders are thoroughly lagged and provided with relief valves; all reciprocating parts except the pistons are of nickel steel, and the shaft is coupled directly

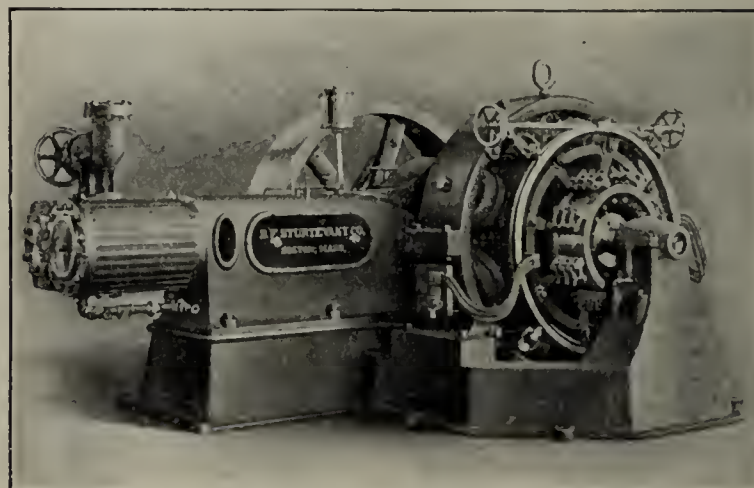


FIG. 3.—75-KILOWATT GENERATING SET.

to the generator, as is the case with the other generating sets here shown.

In the horizontal type, shown in Fig. 3, the sizes range from 15 to 100 kilowatts, with a range of weight from 3,800 to 24,000 pounds. The engines are built for both 80 and 120 pounds steam pressure. The crank shaft is forged in a single piece and the bearings are characteristic of this full line of engines, being of extra size to reduce frictional pressure.

Sturtevant generating sets are to be found in all parts of the world; in the mines of Kalgoorlie, lighting the streets of Boulder, western Australia and operating in far-away New Zealand.

Greatest United States Wheat Crop.—The condition of the American wheat crop, according to Snow's crop estimate, is 91.1 per cent. of a full crop, or 6.1 greater than any preceding year at this period. If there is not a set-back, the wheat crop of the United States this year will be the greatest in the history of the country.

The Atlantic Fruit Company, of Baltimore, and the Cueno Trading Company, of New York, have combined with a capital of \$1,000,000. They will continue as an independent banana trading company, in opposition to the United States Fruit Company.



To All to Whom These Presents Shall Come

Greeting:

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Is to Certify that the Attached

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By the Authority of the

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Bearing the Signatures of

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And that the Holder Thereof has been Granted by the

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The Attached Official Award Ribbon

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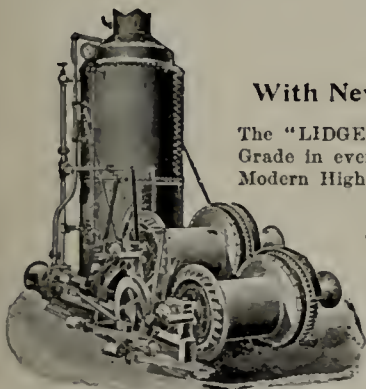
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With New Improved Patent Friction Drum.

The "LIDGERWOOD" Hoisting Engines are Strictly High
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Steam and Electric Hoists.

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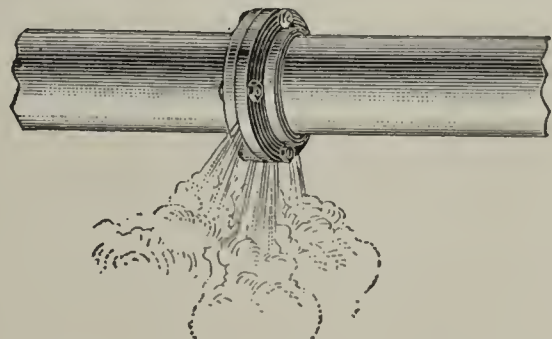
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MINING, RAILROAD AND CONTRACTORS' USE.

Standard Lidgerwood Hoisting Engine.

Send for Latest Catalogue.

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Incandescent Oil Lamps

"A system of illumination (by petroleum) which in respect of efficiency and economy surpasses every other means of lighting."

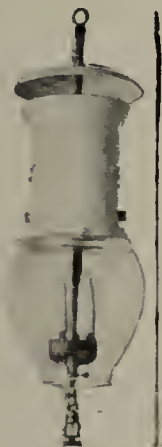
This system supplies oil under pressure to a vapor tube, in which the oil is vaporized or gasified by the heat generated by the lamp. It is an inexpensive and successful lighting system for use in all conditions where a bright and steady light is required.



No. 505.—Outside
Arc Lamp
Outfit, with Tank.
1,000 Candlepower.



No. 405.—Outside
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2,500 Candlepower.



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Our System Lamps include Lamps, Tanks, Piping, Valves and all accessories necessary to make a complete lighting plant, by means of which any number of lamps can be supplied with oil from one tank. Our Fount Lamps are complete in themselves, having the fount attached to the lamp, and are portable, being especially designed for temporary use, where a powerful light is required for a temporary purpose.



No. 416.—Portable
Lamp.
600 Candlepower.

We especially supply the most extensive variety of lamps for inside and outside use. Write us and let us send you illustrations of all the various styles of lamps we carry, also estimates and full particulars regarding installation of this system of lighting. One gallon of oil gives a 1,000-candlepower light for twenty-five hours. Perfectly safe. Does not increase insurance.

For Lighting Streets, Parks, Stores, Dwellings, Wharves, Warehouses, Mines, Railway Stations and Yards, Etc.

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MR. W. J. JOHNSTON
PUBLISHER
AMERICAN EXPORTER



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JAPAN

PHILIPPINE
ISLANDS

CHINA

AUSTRALIA

NEW ZEALAND

TASMANIA

SAMOA

ON JULY 8th, 1905,

Mr. W. J. Johnston, publisher of the AMERICAN EXPORTER, will sail from San Francisco on the Pacific Mail Steamship "Manchuria," for the Hawaiian Islands, Japan and the Philippines, and thence to China and by way of the Torres Straits, Port Darwin and Thursday Island to Australia and New Zealand, returning via Samoa and Hawaii.

The Far East is familiar ground to Mr. Johnston, having been covered by him on a previous tour of the world. Besides renewing many valuable business acquaintances, he will on this trip seek to form many others, to the mutual benefit of all concerned.

At the same time this tour is made the Taft Commission, composed of Hon. William H. Taft, Secretary of War, and United States Senators and Congressmen will visit Hawaii, Japan and the Philippines.

Half the population of the world is in the countries bordering the Pacific Ocean, and when the Panama Canal is completed American manufacturers will be brought into still closer contact with the people of the Pacific.

These great markets naturally look to the United States for manufactured products, and the purpose of this trip is not to actually sell goods, but to bring the importer and consumer in the countries visited to a closer acquaintance with American manufacturers.

We trust our readers and others in the countries visited, interested in American manufactures, will find pleasure and profit in meeting the publisher of the AMERICAN EXPORTER on this tour.

MR. GEISSEL'S FOREIGN TOUR



MR. HENRY L. GEISSEL
EDITOR
AMERICAN EXPORTER

ON JUNE 3d, 1905,

Mr. Henry L. Geissel, Editor of the AMERICAN EXPORTER, sailed from New York on the North German Lloyd Steamship "Princess Irene" for Gibraltar, whence he will proceed to visit the places indicated on above map.

This tour is made wholly at the expense of the AMERICAN EXPORTER, in the interests of its readers and of American trade extension.

Mr. Geissel will call upon the subscribers of this publication and others interested in the purchase, sale, use or importation of American goods, and by gaining a closer acquaintance with the actual requirements of the markets visited, it is expected that the AMERICAN EXPORTER will be enabled to yet more materially assist both the buyer abroad and the manufacturer at home.

Mr. Geissel has made numerous trips of a similar nature over this territory. In addition to a thorough knowledge of both sides of the question, he speaks the languages of the countries to be visited, and has acquaintances in each place on his route. He will endeavor to meet all who are interested in American manufactures.

He will be prepared to furnish desired information relating to various articles of American manufacture, and while not engaged in their actual sale, will assist the buyer and importer in forming the most advantageous connection with American firms, and will point out where, and of whom, the articles best fitting the requirements may be obtained.

We trust each of our readers in the countries visited will find pleasure and profit in this AMERICAN EXPORTER tour in the interest of American foreign trade.

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SPAIN
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ITALY
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INKSTAND No. 3 (small),
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All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

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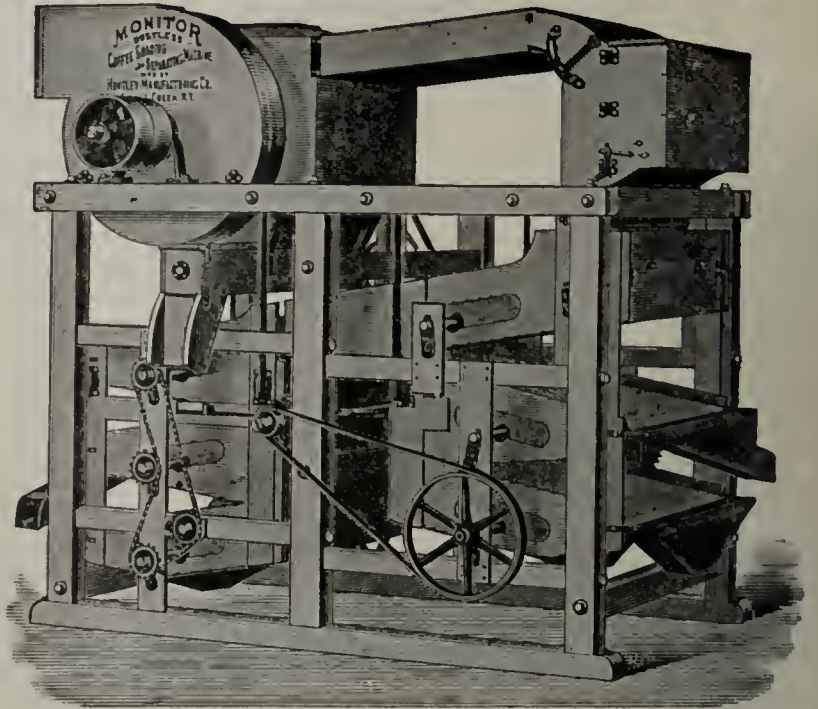
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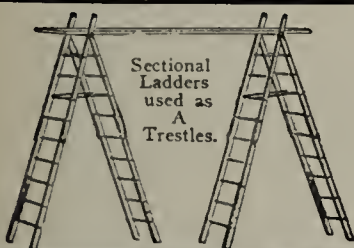
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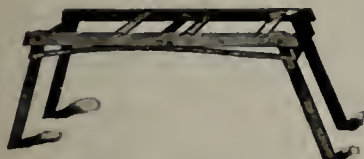
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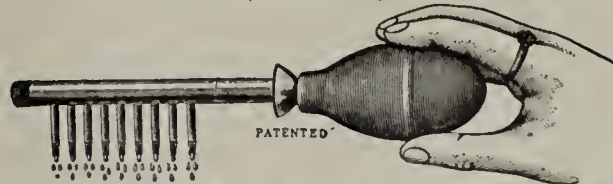
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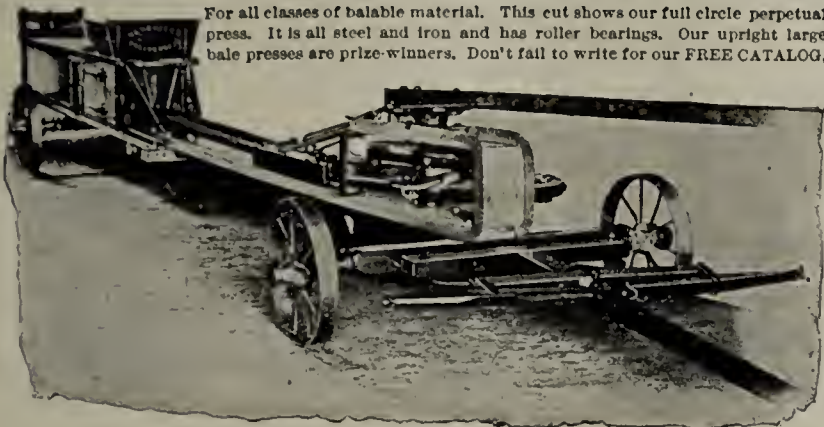
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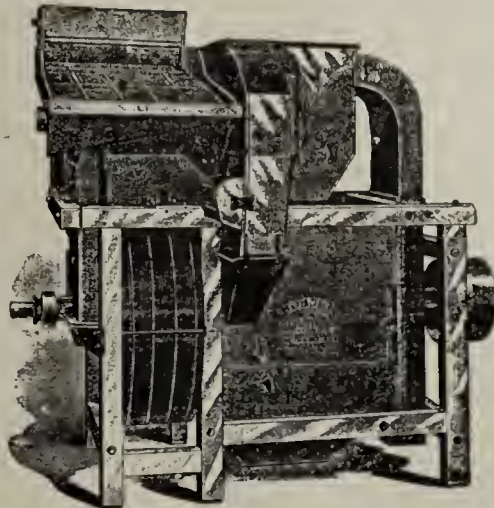
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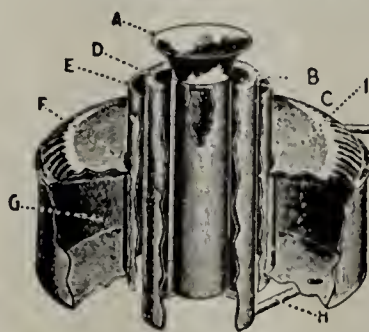
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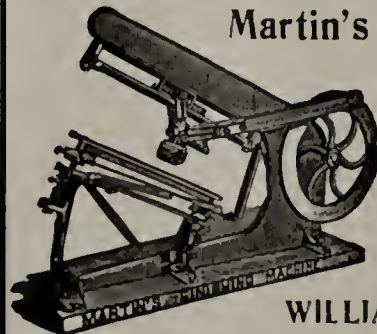
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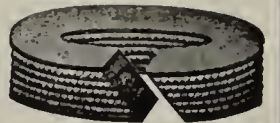
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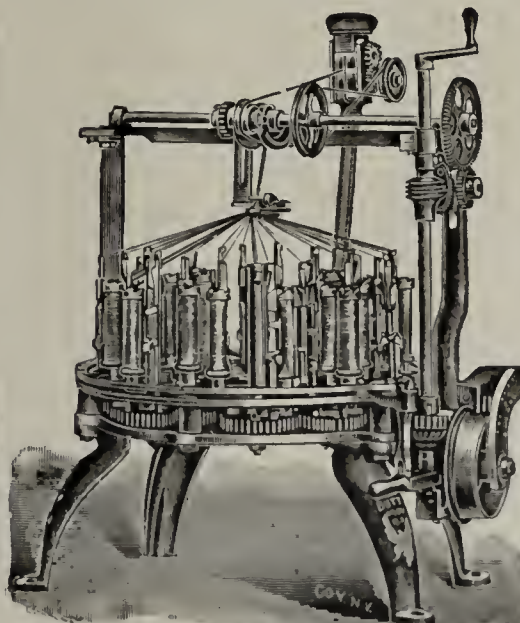
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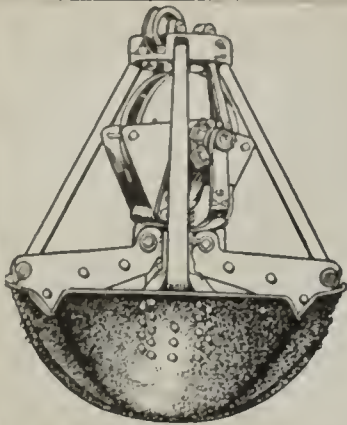
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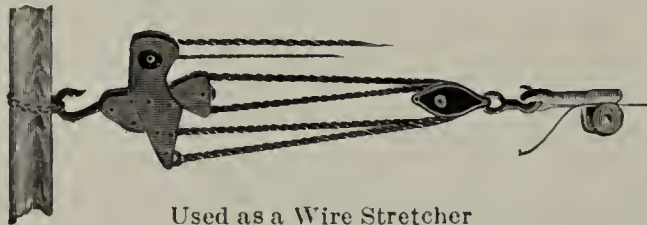


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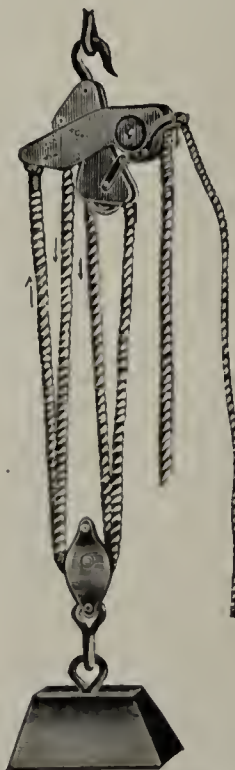
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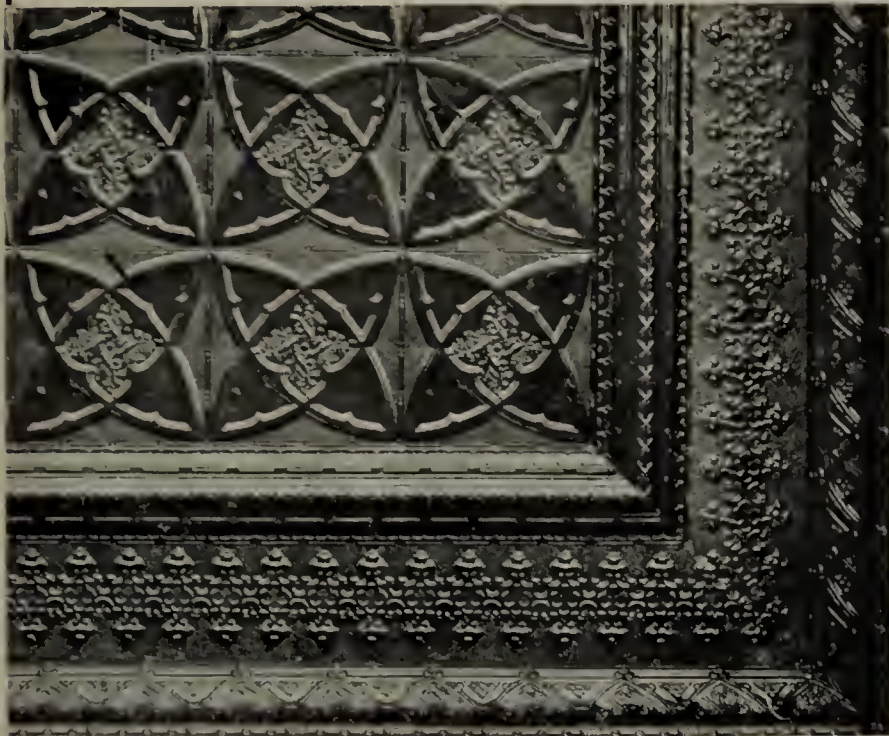


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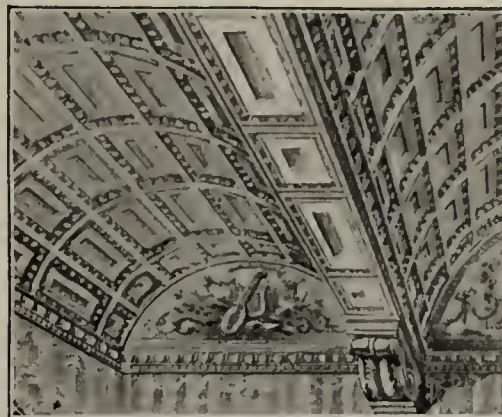
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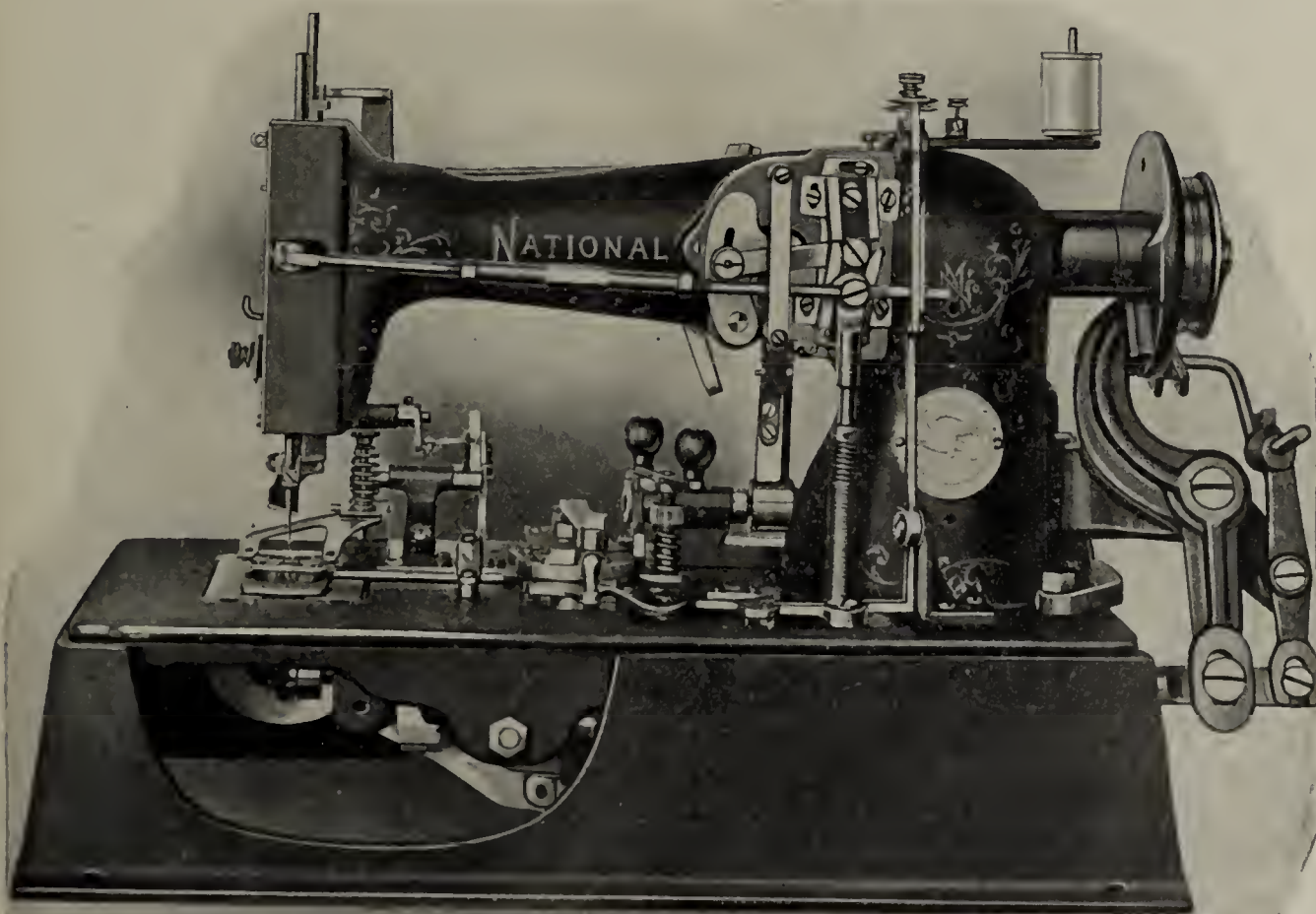
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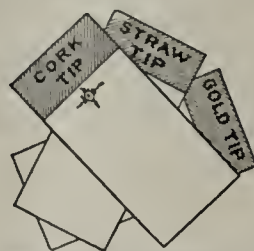
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In fact, practically every article in the paper will be originally written for the AMERICAN EXPORTER and not merely copied from other publications. Editorial writing will not be confined to the editorial pages, a majority of the unsigned articles in each issue being prepared by our staff of editorial specialists who are fully familiar with export matters.

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Simple and durable.

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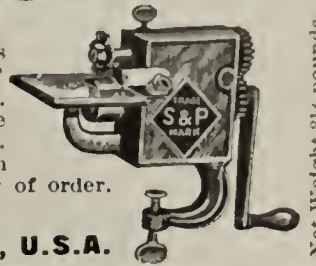
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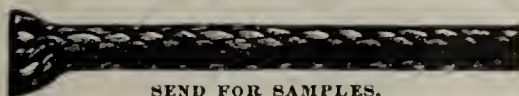


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SAMSON BRAND.

SAMSON CORDAGE WORKS,

Boston, Mass., U. S. A.



No. 25. Quick and Easy Cork Puller.



No. 28. Samson Cork Puller.



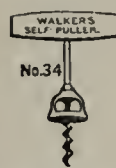
No. 42. Quick and Easy Lemon Squeezer.



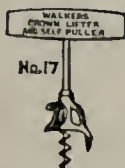
No. 45. Acme Lemon Squeezer.



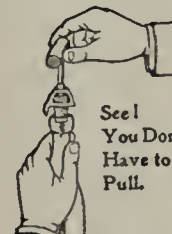
No. 48 1/2. Quick and Easy Shaker.



No. 34. Self-Pulling Cork Screw.



No. 17. Self-Pulling Cork Screw.



No. 48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO.,
ERIE, PA., U. S. A.,

Manufacturers for Export.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the iron that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65

SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.



The National Hand-Operated Buttonhole Machine

Is complete in itself for working buttonholes in all kinds of garments. It is simple, entirely automatic, requires no skill in its operation. Turn the handle and the machine does the work. It makes perfect buttonholes—makes them rapidly. Does nothing else.

THE NATIONAL MACHINE CO.
MAMARONECK, NEW YORK, U. S. A.

for over twenty-five years has manufactured buttonhole machines exclusively. Its machines for manufacturers' use have always been acknowledged the best. Its Newest Manufacturing Machine is the best of all!

CORRESPONDENCE SOLICITED

Goods Well Displayed Is Half the Battle Won!!!

Grand Rapids Fixtures Co., Manufacturers of K.-D. (Knock-down) Show Cases For Export

SHOW CASE No. 31 is Our Leader for Foreign Markets, and is just the thing for displaying Furnishing Goods, Chemists' Sundries, Dry Goods; in fact, is well adapted for the display of any line of goods.

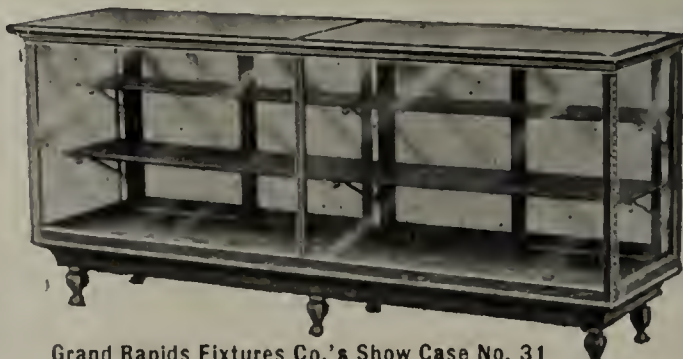
SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

SPECIAL EXPORT OFFER.

Upon receipt of \$42.00 in U. S. Gold (or its equivalent), we will box, ready for transportation abroad, and deliver F. O. B. New York City, one of our No. 31 Show Cases as shown. Net weight, 248 pounds; gross weight, 384 pounds. K.-D. for export measures 28 cubic feet.

Our Catalogue, illustrating and describing the various styles and sizes of K.-D. Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.

GRAND RAPIDS FIXTURES CO., Grand Rapids, Mich., U. S. A.



Grand Rapids Fixtures Co.'s Show Case No. 31

LOVELL MFG. CO.

Erie, Pa., U. S. A.

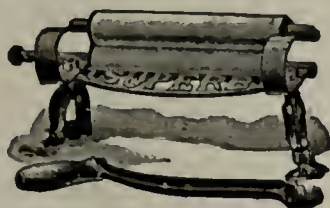
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade



**Delusion
Mouse Trap.**

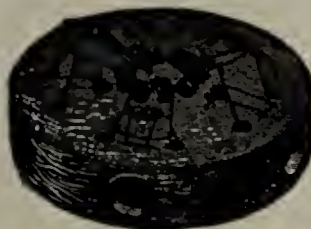


Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



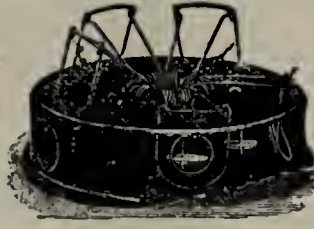
Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap

IRVING'S NEW WIZARD OR "GY-ROTARY" TOP

"The Quickest Money-
Maker Ever Placed
Upon the Market."

Admittedly the Greatest
American Toy. Its wonder-
ful performance baffles the
scientists, interests the
adult and delights and
educates the child; affords
an endless source of entertain-
ment.

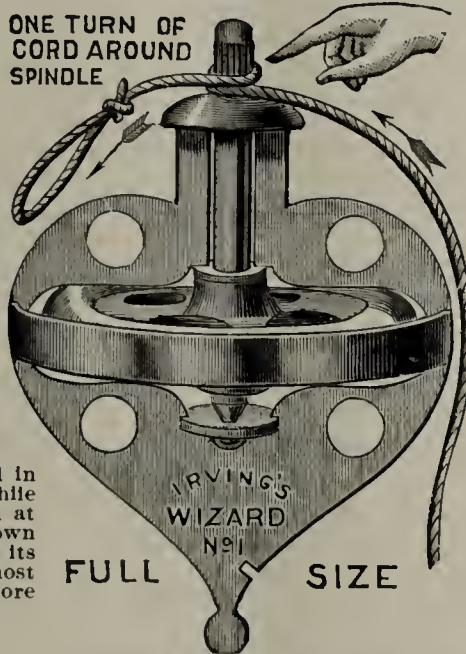
THIS MECHANICAL
PARADOX is constructed on
accurate scientific principles; a
perfect little high-speed ma-
chine, made of STEEL, nickel-
plated; capable of 20,000
revolutions per minute, and
can be put in motion by a child in
three seconds. Can be handled while
running at full speed and placed at
any angle, where contrary to known
laws of gravitation it maintains its
equilibrium. Performs over 40 most
interesting tricks, or 15 times more
than all other tops combined.

FOR EXPORT
ONLY—\$9.00.

Upon receipt of \$9.00 in U. S.
gold or its equivalent, we will
box and deliver f. o. b. New York
City, one gross (144) IRVING'S
NEW WIZARD OR "GY-RO-
TARY" TOPS. Weight, boxed, 30
pounds. Size of box, 17½ x 8½ x 8½
inches.

ORDER NOW. YOU WILL
SURELY WANT MORE.

Wizard Novelty Co., Inc.,
Philadelphia, Pa., U. S. A.



Patent Applied for July 19, 1904.



A few of the many positions in which
this wonderful top will spin.



EMBROIDERY HOOPS

Made from selected light-colored hardwood,
finished perfectly smooth and true in shape.

Sold in over 25,000 stores throughout America and other countries

The different style hoops are put up separately,
½ dozen solid pairs of a size in a covered package.

Duchess Hoops

The most popular Hoops on the
market. Made in sizes 4, 5, 6, 7,
8, 10 and 12 inch diameter. It's
the Felt-Cushion or band around
the inner hoop of the "Duchess"
which holds tightly stretched
light or heavy fabrics equally
well, and renders slipping impossible.



Princess Hoops

The perfect adjustable
Hoops. Sizes 4, 5, 6, 7, 8, 10
and 12 inch diameter. The
Bow-Spring in the "Princess"
adjusts itself to different
thicknesses of material, hold-
ing the fabric firmly and with-
out injury.



Royal-Oval Hoops

Made in
2 sizes.

3 by 6 inches for
small embroidering,
especially desirable for
working designs on
stockings.

6 by 12 inches for
drawn-work and large embroidering, having every advantage of a
large 12-inch round hoop, with the convenience in handling of a
small size.



Special-Select Hoops

Sizes 4, 5, 6, 7, 8, 10
and 12 inch diam-
eter.

These are low-priced, plain round wooden Hoops, lathe-turned,
very smooth and carefully fitted.

SPRING-WINDING TOPS

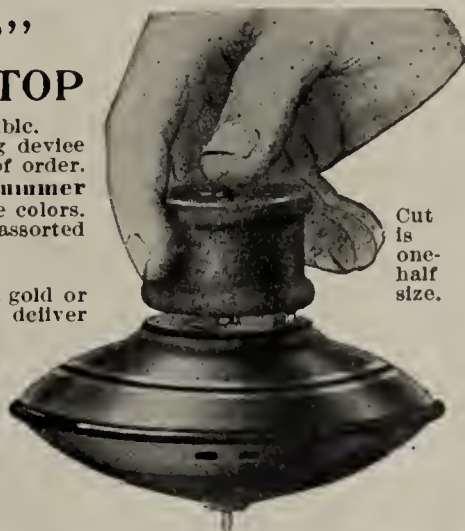
No string—just wind them up, push on the stem and away they go
spinning with great force. Any child can spin them. The most pop-
ular and fascinating tops on the market. Spin the longest.

"NEVER-STOP" HUMMING TOP

Made of metal and indestructible.
Spun by an automatic spring device
which cannot break or get out of order.
It's a Beauty and a Great Hummer
Handsomely enameled in five colors.
Packed one dozen in box, assorted
colors.

For Export Only.

Upon receipt of \$30 in U. S. gold or
its equivalent, we will box and deliver
f. o. b. New York City, 4 gross
(576) "Never-Stop" Humming
Tops. Weight, boxed, 100
pounds. Box measures 7 cubic
feet.



Cut
is
one-
half
size.



Cut
about
one-
half
size.

THE FAMOUS SPRING-WINDING FLAG TOP

The funniest top you ever spun. Spins on
either end, or in the holder, when inverted and
held in the hand. These tops are orna-
mented with the National Flag colors of
any country desired.

Mention country when ordering.
Made of hardwood with metal points and
beautifully finished. Packed two dozen in a box.
Upon receipt of \$24 in U. S. gold or its equiv-
alent, we will box and deliver f. o. b. New York
City, 6 gross (\$64) Flag Tops. Weight, boxed,
100 pounds. Size of box, 4 cubic feet.

THE GIBBS MFG. CO., Canton, Ohio, U. S. A.

Order direct or through any reliable exporter.

The VAN BIBBER ROLLER CO.

CINCINNATI,
OHIO, U. S. A.

VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

PRINTERS' ROLLERS

For ANY climate, hot or cold, can be made at once by any printer. You can make the heat rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price, 35c. Last per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Amsinck & Co., American Trading Co. or any other responsible New York exporter.

Printers' Roller Composition.**RUBBER STAMPS**

Can be made with good profit, and without previous experience on our

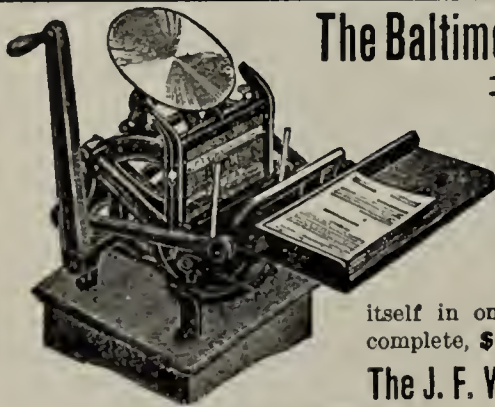
Patented Automatic Vulcanizer and Mould Press.

Full instructions with each outfit.

COMPLETE MANUFACTURING OUTFITS, \$25 TO \$100.

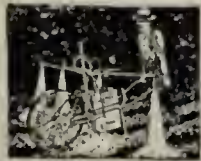
Send for Export Catalogue No. 1.

BARTON MFG. CO., 335 BROADWAY,
NEW YORK, U. S. A.

**The Baltimorean Printing Press
No. 14**

Will print a form of type 6x9 inches, so that any merchant, banker, druggist or other business man can print his own letter heads, circulars, notices, business cards or envelopes, and will pay for itself in one year. Price, with type, complete, \$35.00.

The J. F. W. Dorman Co., Baltimore,
Md., U. S. A.

**HURST'S COMBINATION
FIELD AND ORCHARD
SPRAYER**

Adapted to High Tree, Potato and Truck, or Anything Requiring Spraying

Used by Growers of from 1 to 20 Acres or More. A big seller everywhere. Write us. Orders direct or Exporting Houses.

H. L. HURST MFG. CO., Canton, Ohio, U. S. A.

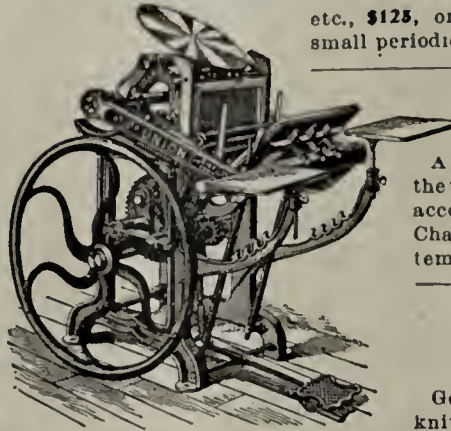
Manufacturers "all kinds" Spraying and Painting Machinery.

**CHEAP
PRINTING.**

Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

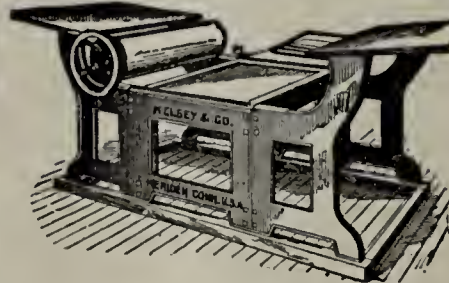
10x15-inch Press, with 10 styles of type, ink, etc., \$125, or with more type, rules, etc., for small periodical, \$200.

**PRESS UNION.**

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, \$200. Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., \$400, outfit included.

**CARD AND PAPER
CUTTER.**

Good hand machine with 24-inch steel knives, \$12.00.

**Cylinder Press.**

For newspaper and large announcements. Bed, 29x43 inches. Price, \$500. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.



Machine showing rocked position.

The WINGET CONCRETE MACHINE CO.
COLUMBUS, OHIO, U. S. A.,

MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

SEND FOR OUR NEW CATALOGUE.

In order to facilitate our increasing export business, we desire to establish an agency with one responsible firm in each trade centre of the world.

**BRADLEY
SHELF BRACKETS and COAT AND HAT HOOKS**

ORDERS RECEIVED THROUGH EXPORT HOUSES.

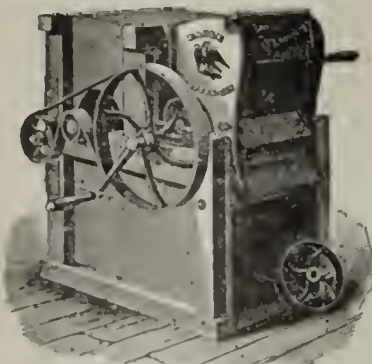
SAMPLE ASSORTMENT OF BRACKETS COSTS ABOUT \$15.00.

Weigh about 200 pounds. Measure 42 x 23 x 18 inches.

HOOKS, No. 15, JAPANNED, 12 gross in case. Weigh about 130 pounds. Measure 31 x 14 x 13 inches.

Order a "sample assortment" of Brackets and a case of Hooks.

ATLAS MANUFACTURING CO., NEW HAVEN, CONN., U. S. A.

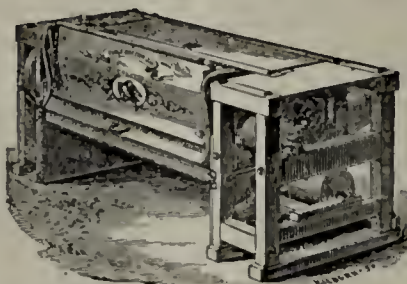


Hand Gin.

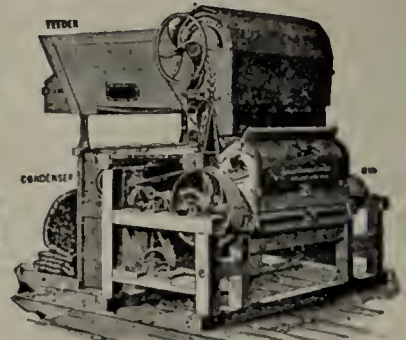
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.

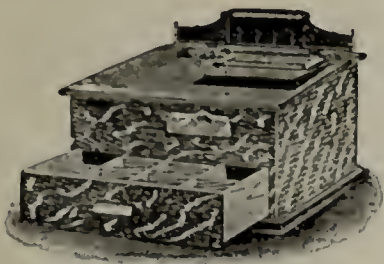


Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., BRIDGEWATER, MASS., U. S. A.

Successors to EAGLE COTTON GIN CO.,

"SECURITY" Cash Recorder



No. 88.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

Write for Circular and Prices to

HOUGH CASH RECORDER CO.,
INDIAN ORCHARD, MASS. U. S. A.

Imperial Pocket Cigarette Machine

Greatest Invention of the Age for Cigarette Smokers.



It enables smokers to make their own cigarettes by using ready-made tubes which we supply with our machines. Plain or fancy tips can be had. Different grades of tobacco may be mixed to suit the smoker, and, while saving 300 per cent., he smokes at the same time the tobacco that suits his taste best.

On receipt of \$25 in United States gold, or its equivalent, we will box, ready for steamer, and deliver f. o. b. cars New York, one gross Imperial Cigarette Machines, each in a box with 100 tubes. One dozen samples, postpaid, \$3; one single sample, postpaid, 50 cents. Agents wanted.

Columbia Machine Works and Mfg. Co., 330 SEVENTH AVENUE,
NEW YORK, U. S. A.

The Best-Selling Shoe Polish

IN AMERICA.



TO OPEN THE BOX
TURN THE KEY.

EVERY BOX HAS OUR OPENING KEY
ATTACHED TO REMOVE THE COVER.

BLACKOLA is different from every other shoe
polish in quality and convenience.

MANUFACTURED SOLELY BY

THE WORLD POLISH MFG. CO.

Dealers are requested
to write for sample.

YORK, PA., U. S. A.

The Premier American Shoe

Polishes



OKOLITE

An Oily Paste Polish for
ALL Black Leathers, Also

BROWN OKOLITE
For ALL Russet and Tan Shoes

We are manufacturers of over 60
varieties of Shoe Dressings, Pol-
ishes, Harness Oils, Etc.

Orders executed either direct or through export commission firms.
Correspondence solicited.

THE BURCKARD BLACKING & OIL CO., BALTIMORE,
U. S. A.

The Springfield Tire and Rubber Co.

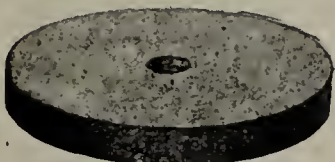
SPRINGFIELD, OHIO, U. S. A.

MANUFACTURERS AND EXPORTERS OF

Springfield Abrasive Polishing WHEELS and Blocks.

WHEELS, 2 to 18 inches in diameter and
 $\frac{1}{4}$ to 4 inches thick.

Made in different sizes.
Unrivalled for remov-
ing rust spots, cleaning
and polishing steel and
other metals, giving
them fine and smooth
surface, not scratching
or injuring.



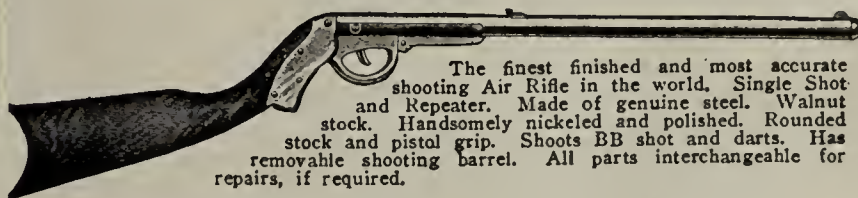
Made with Emery or
Carborundum. Used
dry or with water, but
not with oil.

Wheels made in sizes
from 2 in. to 18 in. di-
ameter, and from $\frac{1}{4}$ in.
to 4 in. thick.

Blocks of 3 to 12 inches long. Blocks of 1 to 3 inches wide.
Blocks of $\frac{1}{4}$ to 2 inches thick.

Prices and discounts on application. Send for catalogue. Mention this paper.

The "KING" Air Rifle



The finest finished and most accurate
shooting Air Rifle in the world. Single Shot
and Repeater. Made of genuine steel. Walnut
stock. Handsomely nicked and polished. Rounded
stock and pistol grip. Shoots BB shot and darts. Has
removable shooting barrel. All parts interchangeable for
repairs, if required.

OUR SPECIAL OFFER FOR FOREIGN MARKETS:

Upon receipt of \$25 in United States Gold or its equivalent, we will box and
crate, ready for steamer, and deliver f. o. b. cars New York, three dozen "King"
Single Shot Air Rifles and one dozen "King" Repeating Air Rifles. Four boxes
in all, crated. Gross weight, 112 pounds. Net weight, 84 pounds. Dimensions,
12x15x33 inches.

The "King" Air Rifle sells quickly and satisfies the buyer every time. It's
a gun-like gun and a reliable Air Rifle.

We are the originators and inventors of the Air Rifle and have the largest plant
devoted exclusively to the manufacture of Air Rifles in the world. This of itself
is strong evidence of the superiority of our Air Rifles.

Order through any responsible exporter. Send for Catalogue of our full line of
Air Rifles.

THE MARKHAM AIR RIFLE CO.,

PLYMOUTH, MICHIGAN, U. S. A.

EAGLE MOP WRINGERS AND BUCKETS COMBINED



Are used in homes, public build-
ings, hotels, barrooms, barber
shops, stores, churches, schools,
clubrooms, office buildings, rail-
road stations and everywhere
mopping up or washing is done.

DIRECTIONS FOR OPERATING:

Put left foot on foothold to hold pall sta-
tionary, the other foot on lever; press lever
down and rolls will close tightly together;
pull mop straight out. Pressure obtained
from 0 to 200 pounds, as may be required.

Send for Catalogue.

Eagle Cooperage Works, Sole Manufacturer and Patentees, Circleville, O., U. S. A.

ELECTRIC



WALL PAPER CLEANER

Make OLD or SOILED Wall Paper or Carpets LOOK LIKE NEW.

Electric Wall Paper and Fresco Cleaner.

Cleans easily and perfectly. Al-
ready prepared for use. Will keep
for years. Contains no water, there-
fore does not mould nor dry out.
Any one, even a child, can use it, as
it is impossible to streak the walls
with it. It is a thorough disinfectant
and leaves a room clean and healthy.
Put up in 16-ounce labeled tin cans.

Electric Cleanser.

Cleans Carpets, Rugs, Curtains,
Woodwork, etc., and removes dirt
and spots from Carpets without tak-
ing them from floor.

Put up in 16, 10 and 2 ounce enameled
cans and 25-lb. pails; 250-lb. barrels.

Prices and further particulars on
application.

The Electric Cleanser Co., Canton, Ohio,
U. S. A.

DIETZ



VICTOR LANTERN

COX N.Y.

DIETZ MONARCH LANTERN

is exactly the same as the Victor Lantern, but with round tubes.

These Lanterns are carefully packed for export in strong cases containing one dozen, weighing, net, 21 pounds, gross, 37 pounds, and measuring 3 1-6 cubic feet.

The net export price of the Monarch and Victor Lanterns is \$4.28 per dozen, F. O. B. New York harbor.

We have been in business since 1840, and are the largest manufacturers of Tubular Lanterns in the world.

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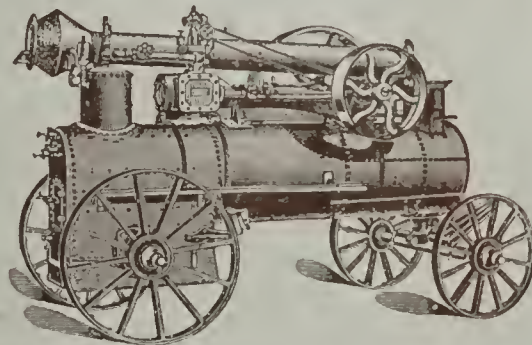
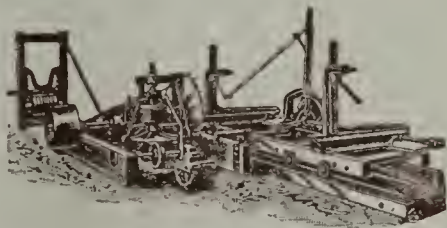
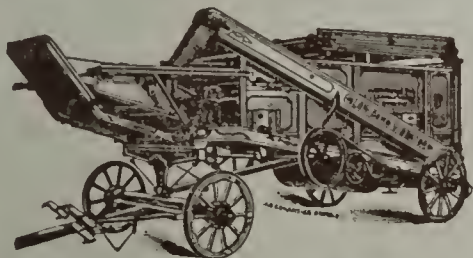
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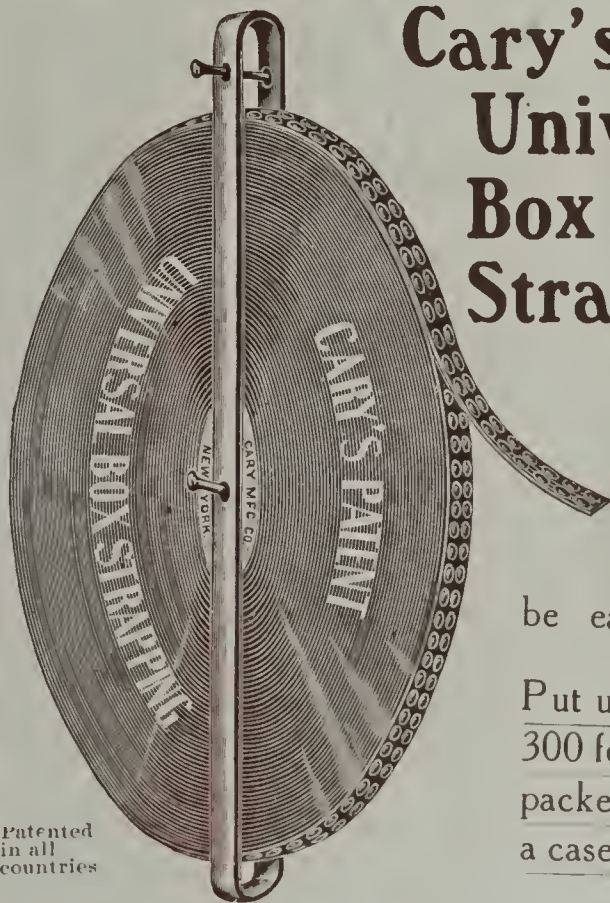
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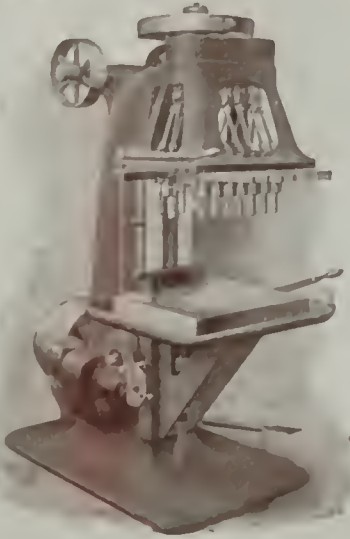
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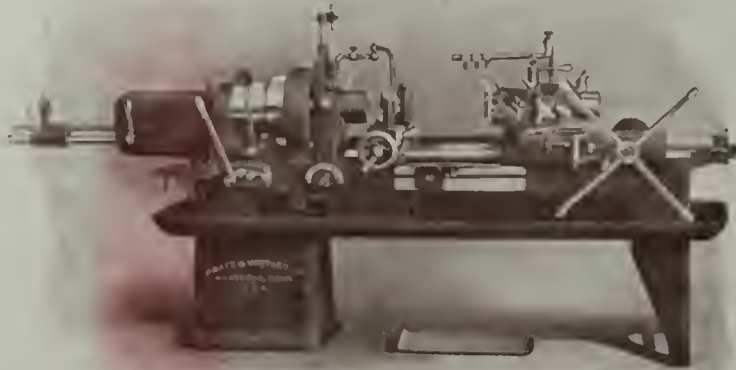
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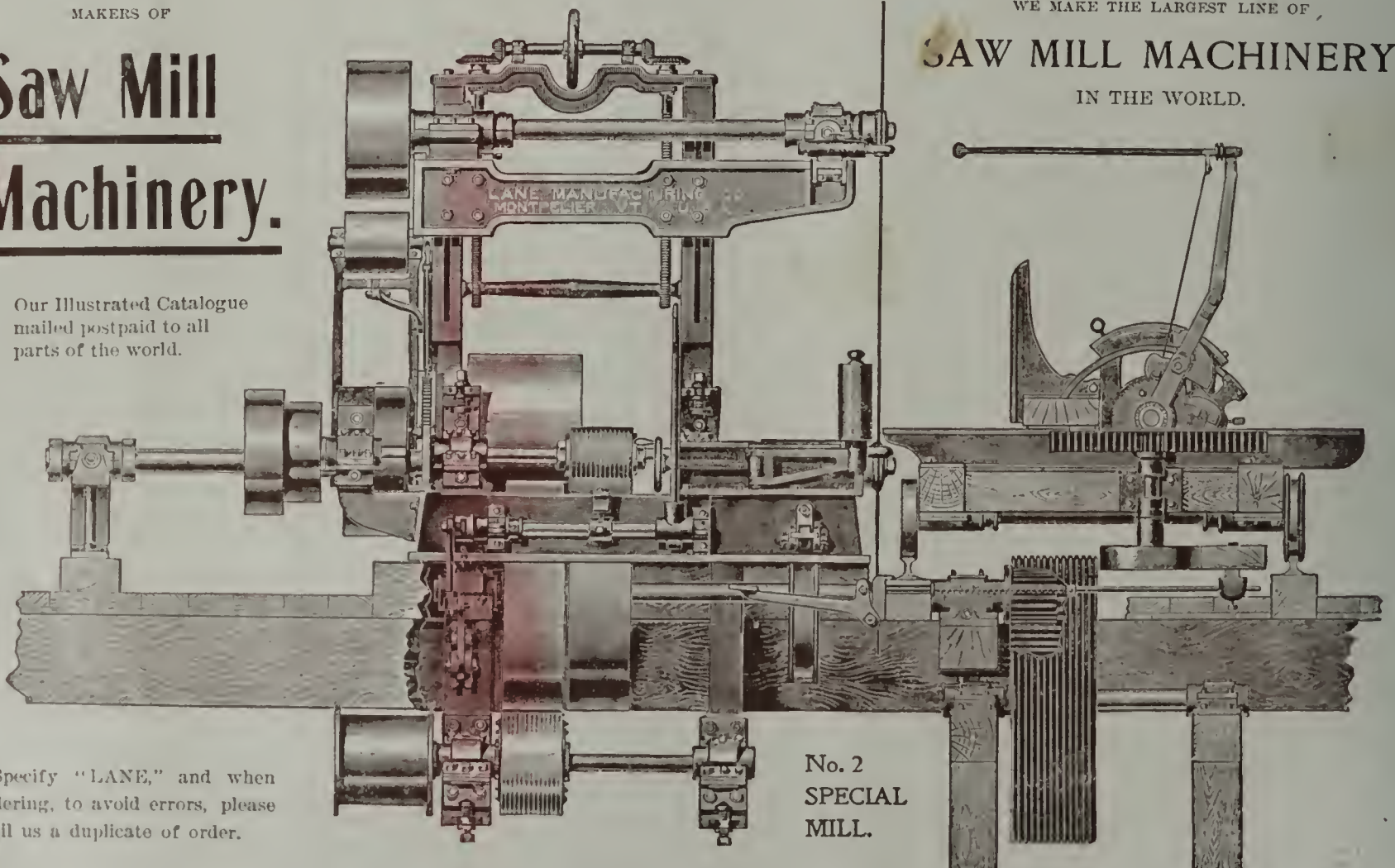
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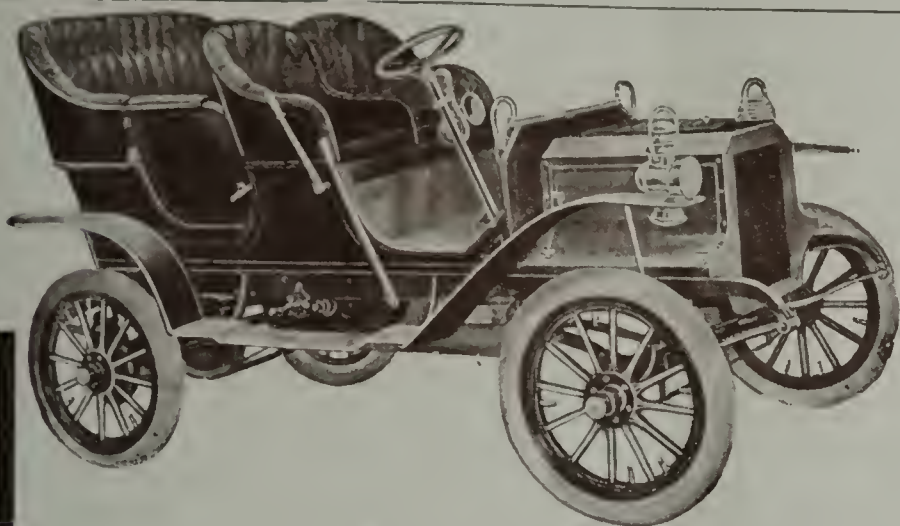
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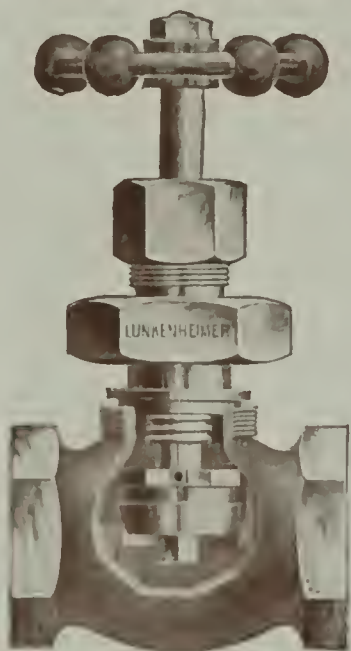
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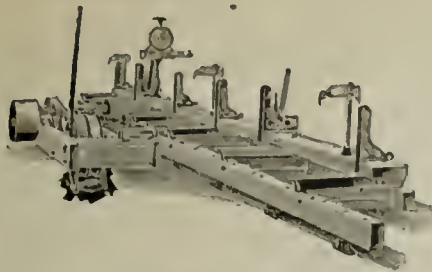
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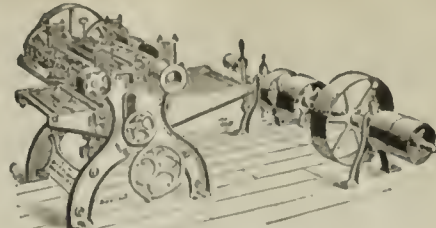
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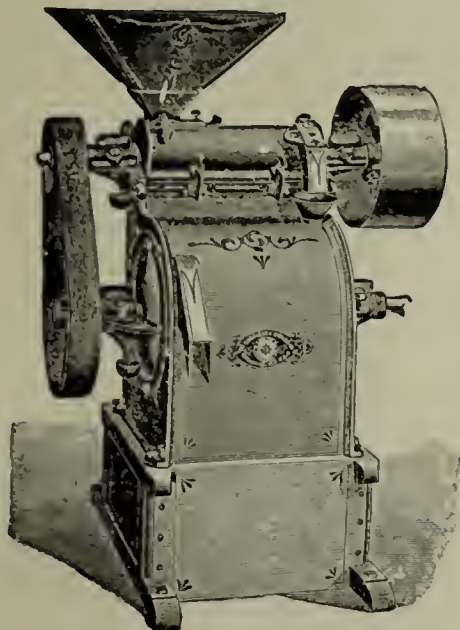
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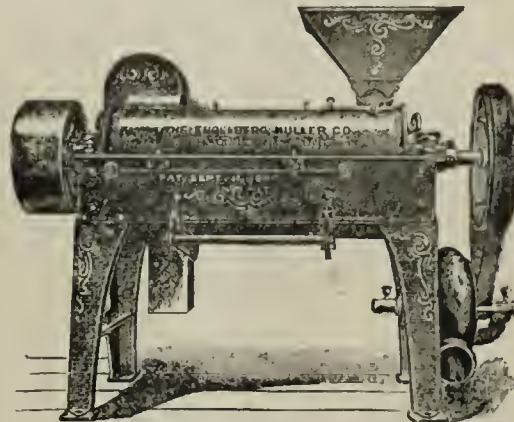


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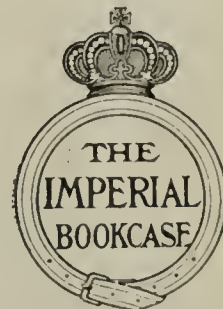
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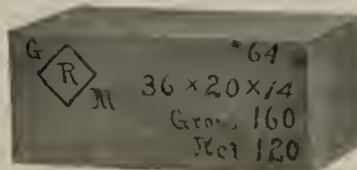
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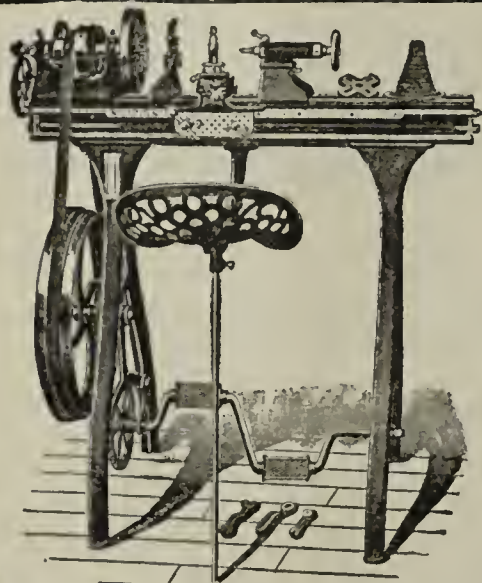
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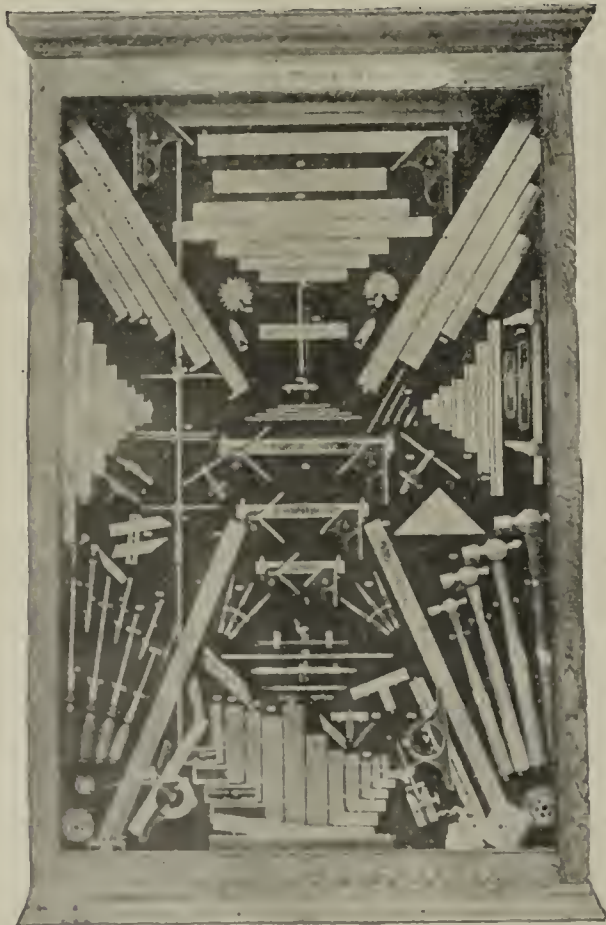
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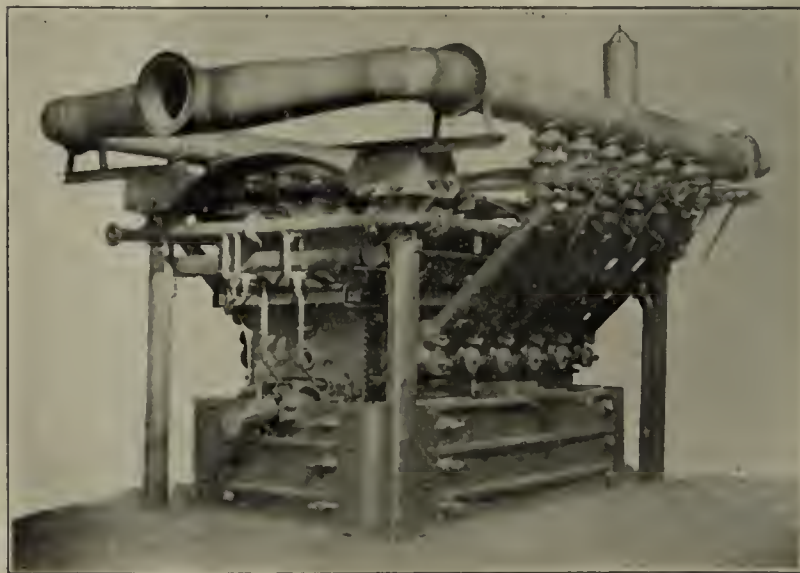
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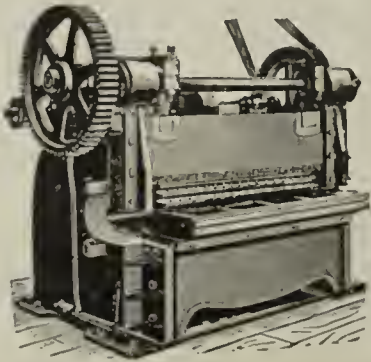
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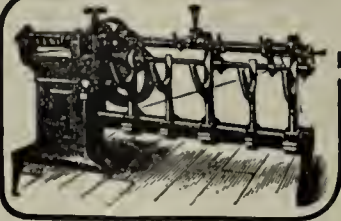
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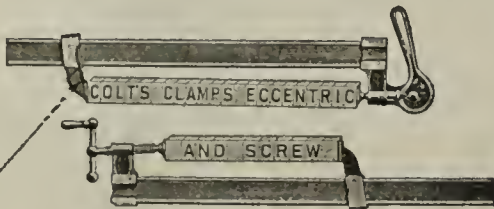
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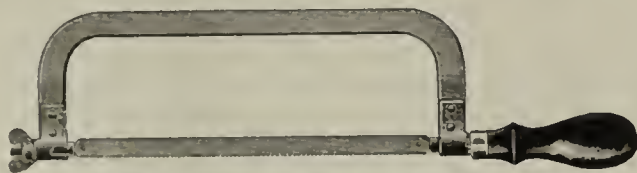
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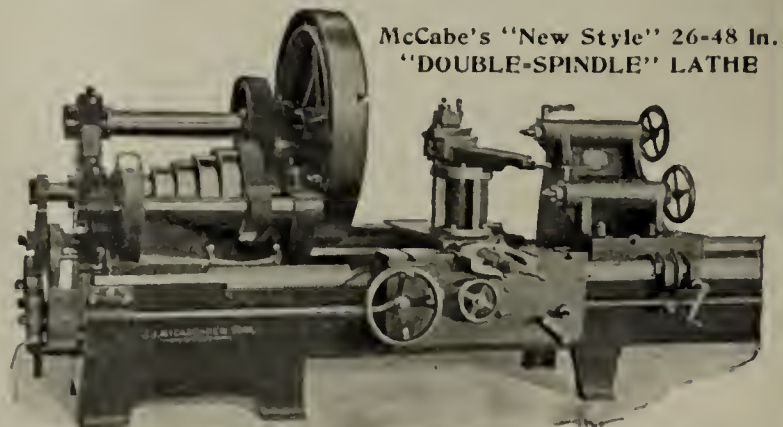
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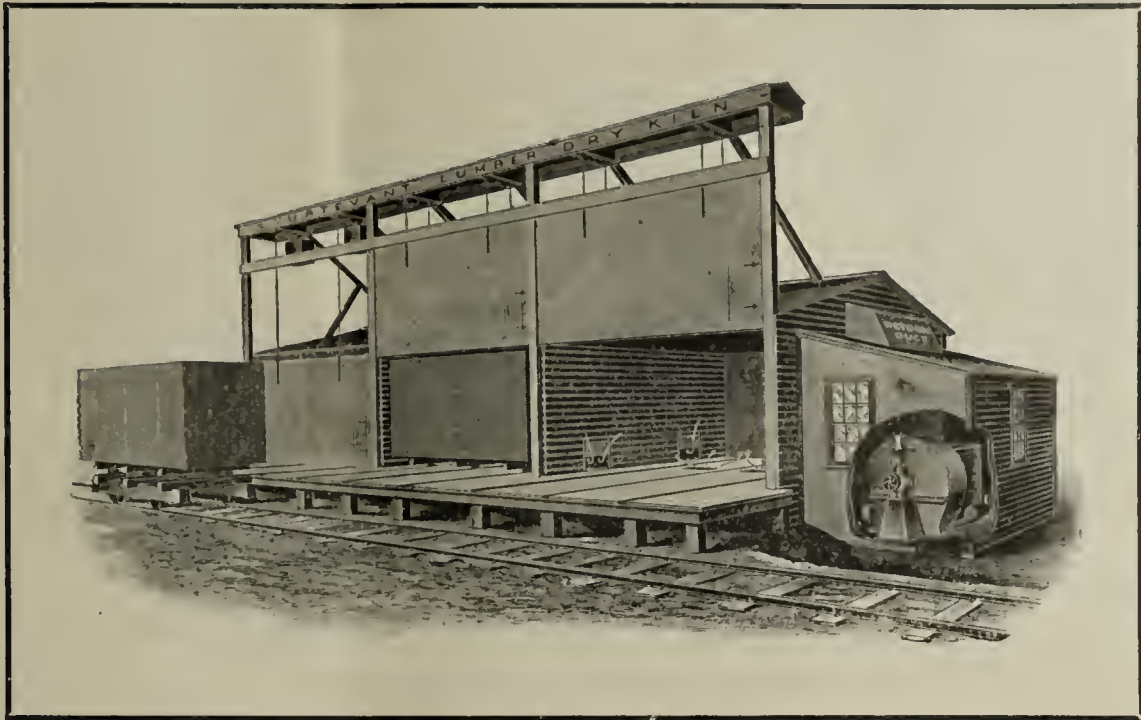
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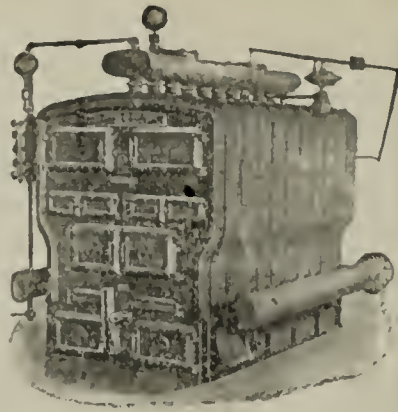
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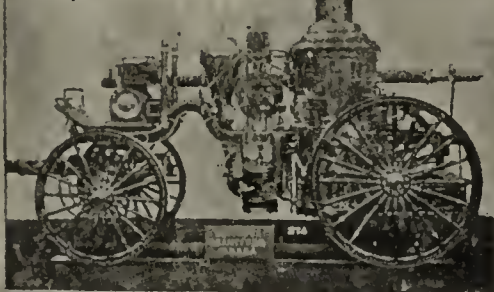
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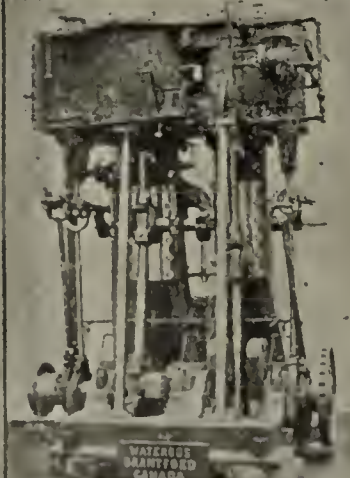


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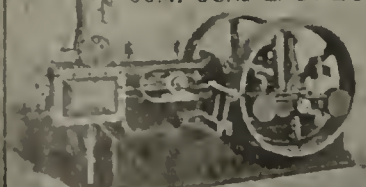
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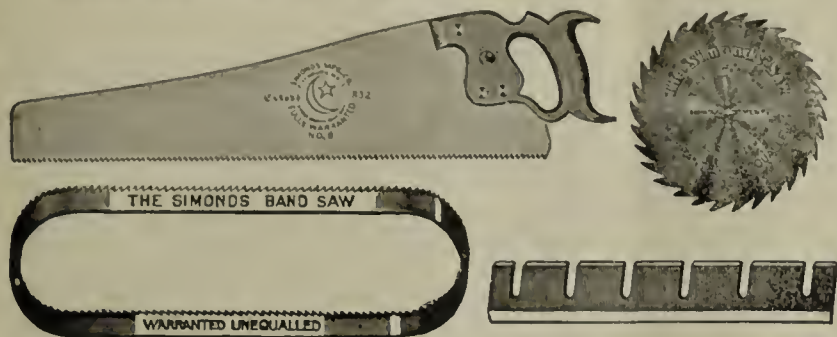
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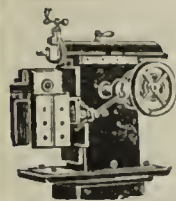
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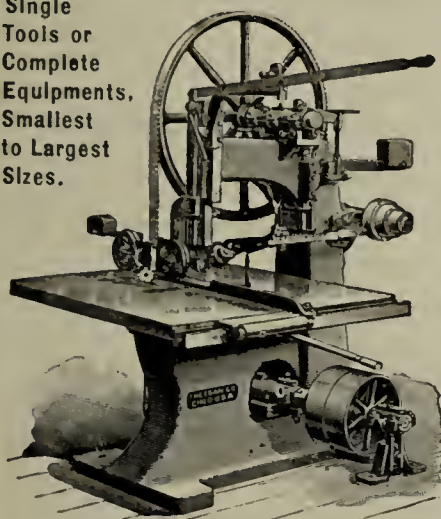
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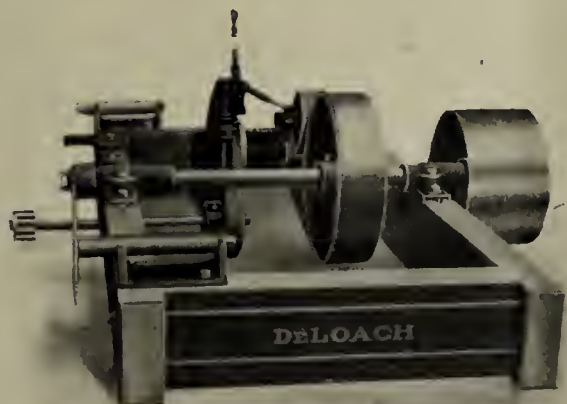
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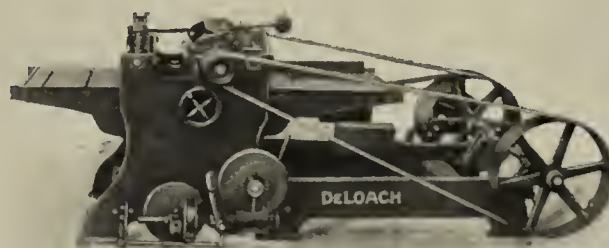
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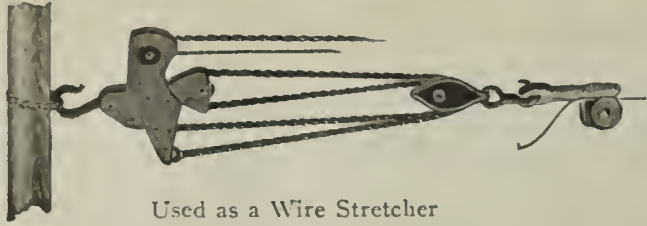


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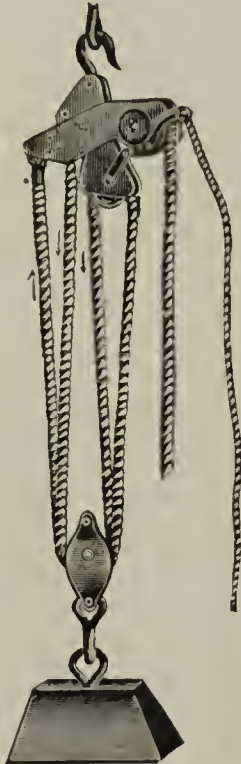
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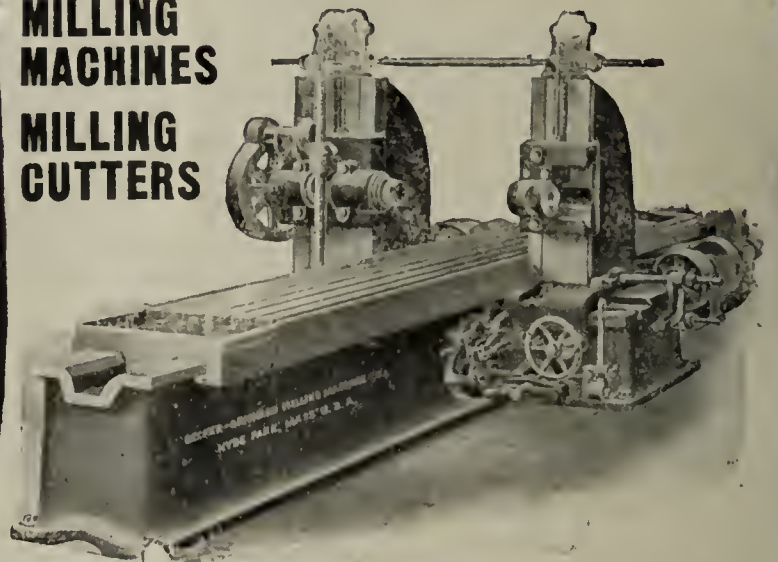


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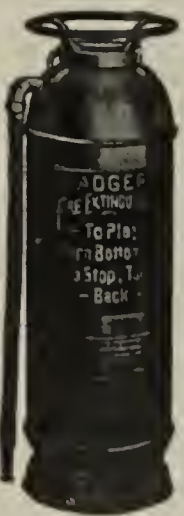
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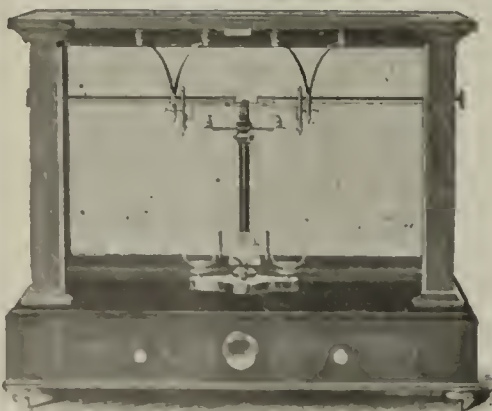
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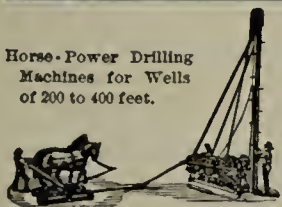
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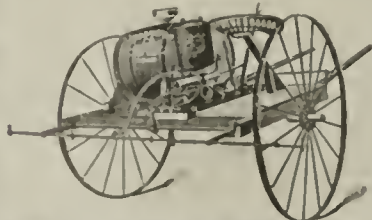
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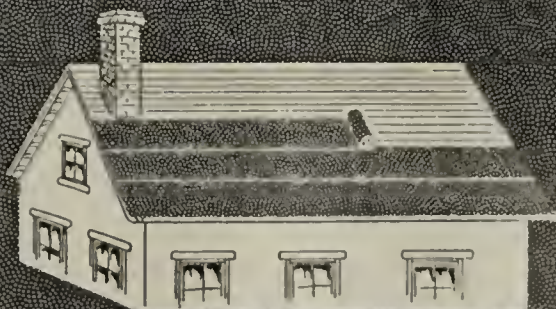
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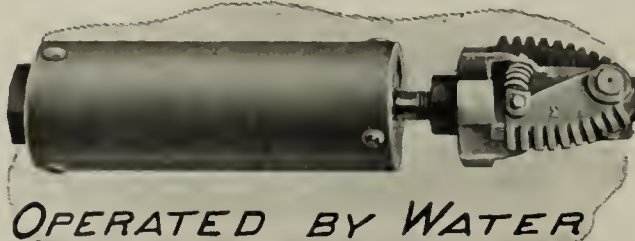
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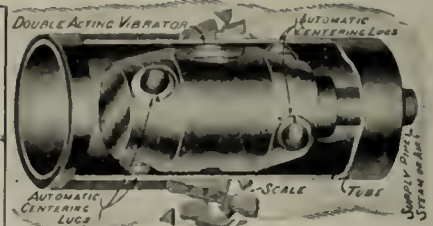
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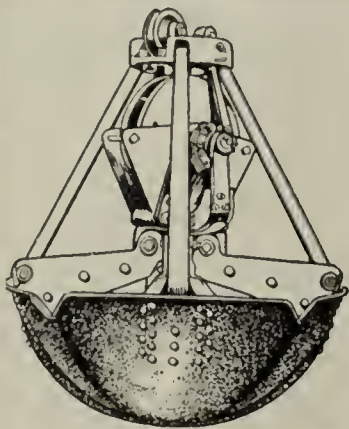
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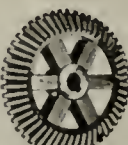
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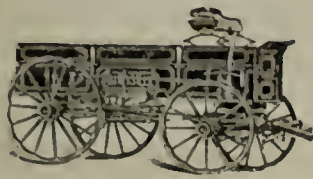
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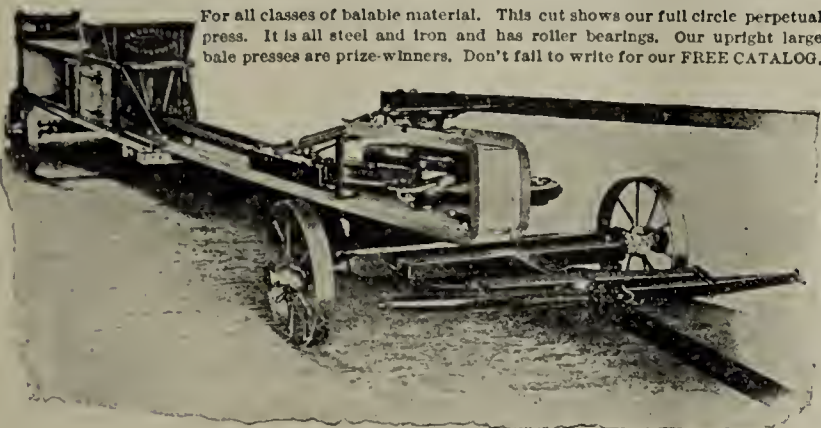
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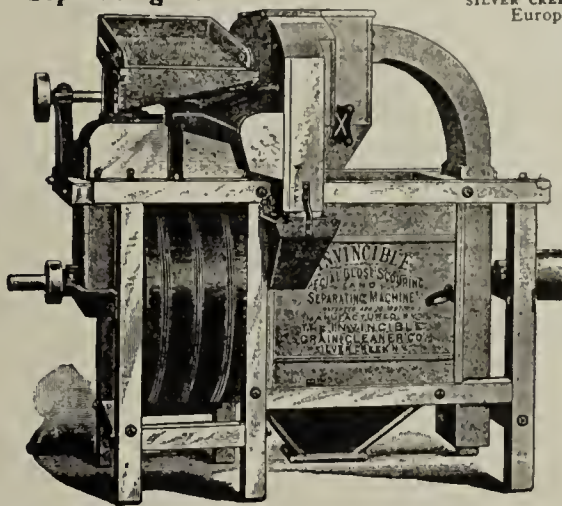


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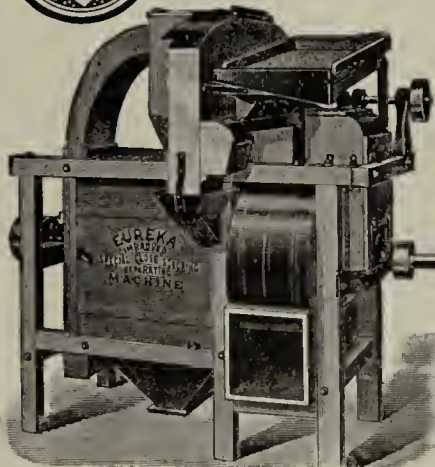


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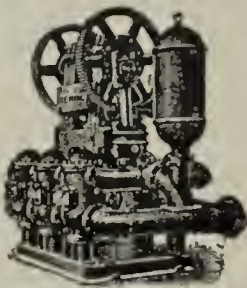
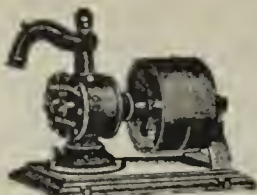
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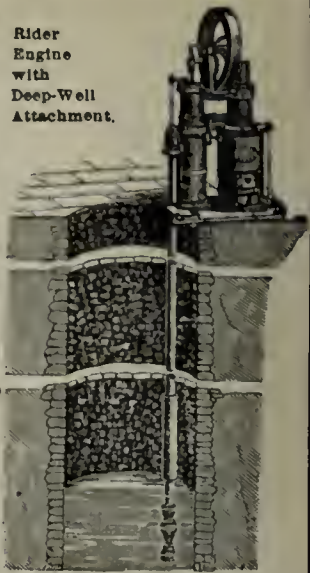
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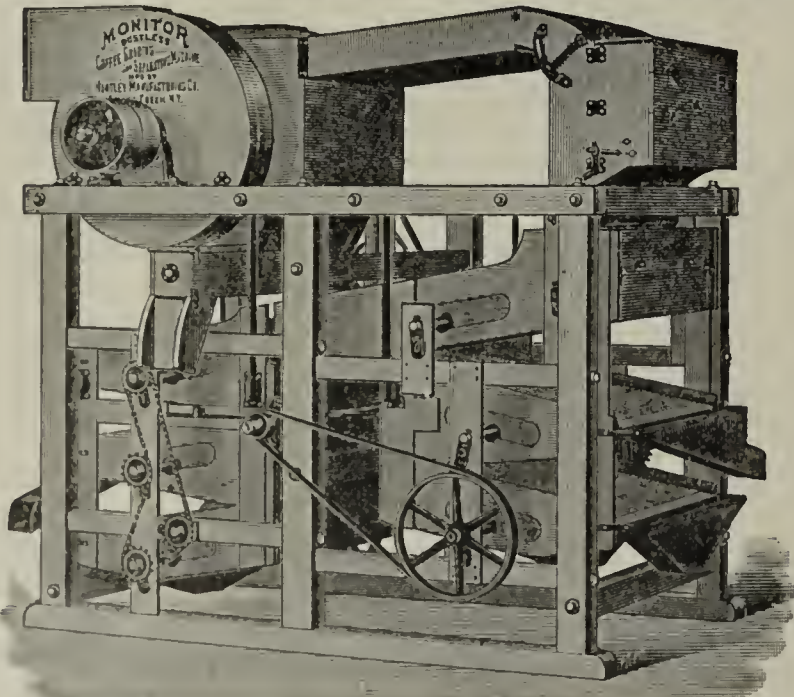
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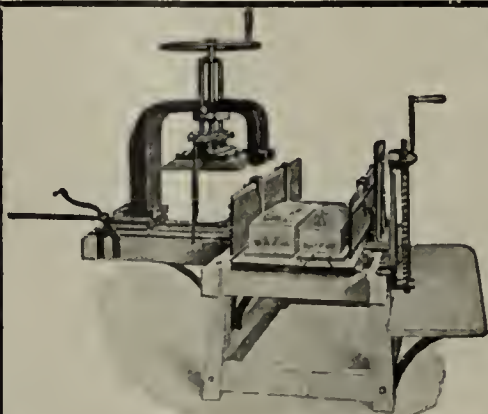
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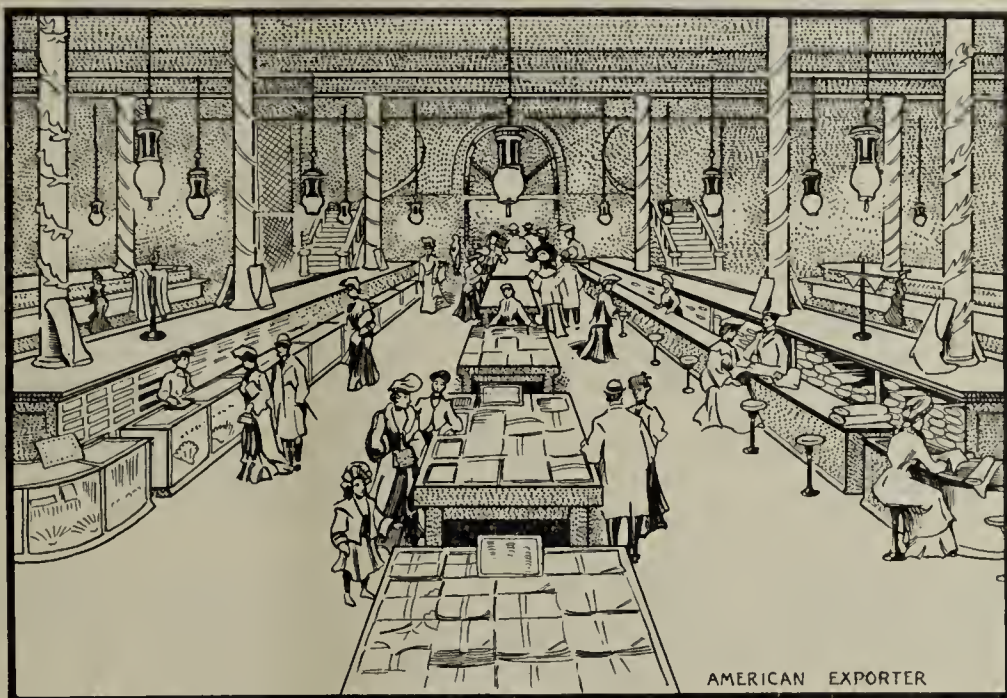
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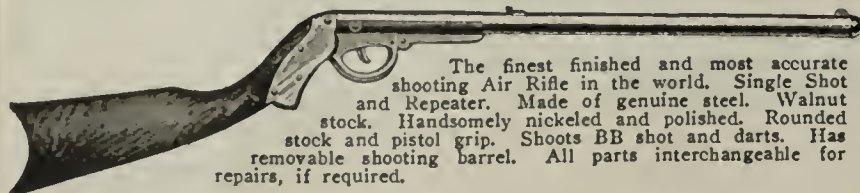


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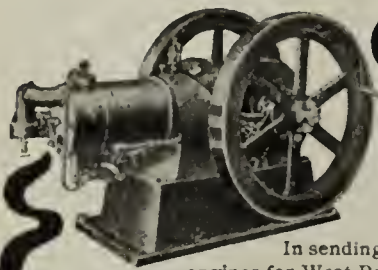
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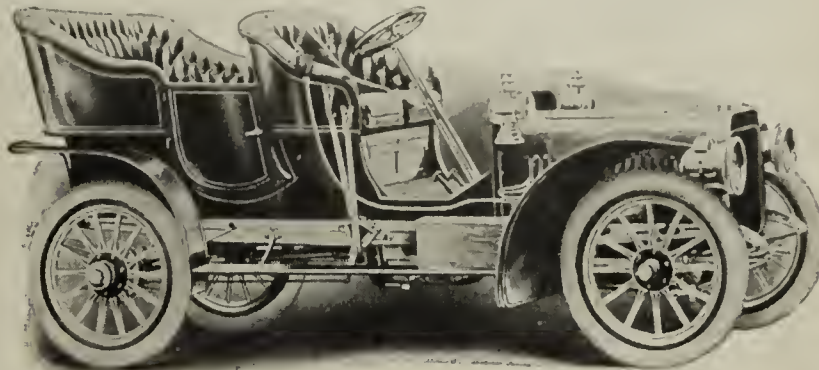
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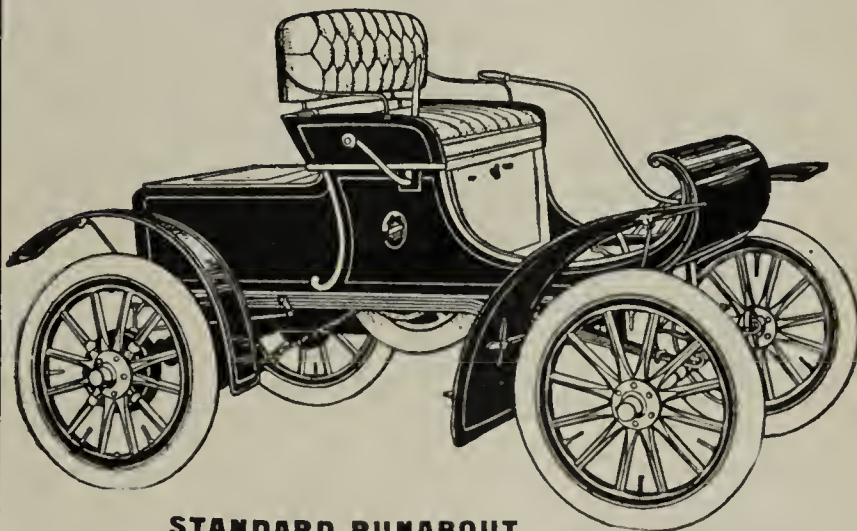
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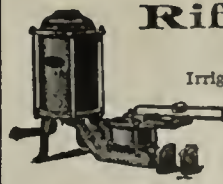
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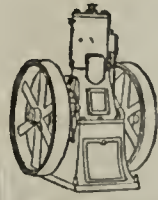
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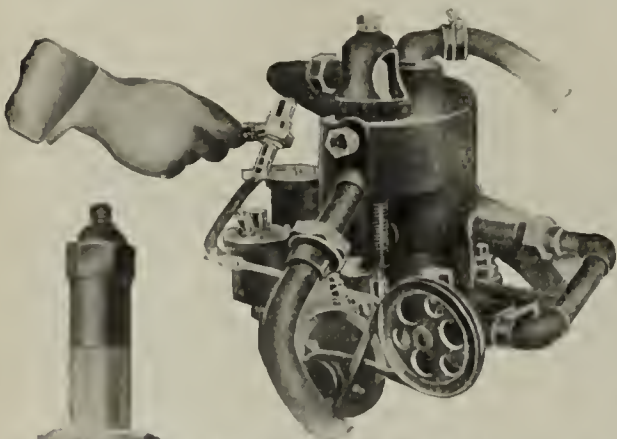
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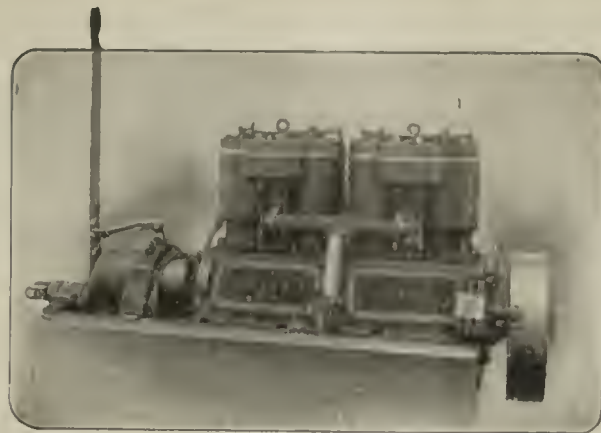
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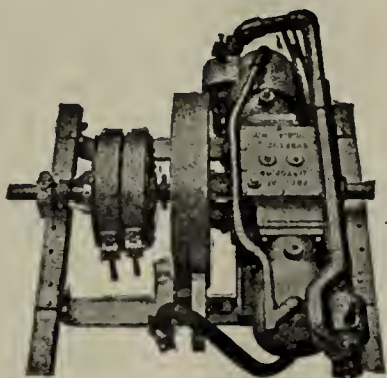
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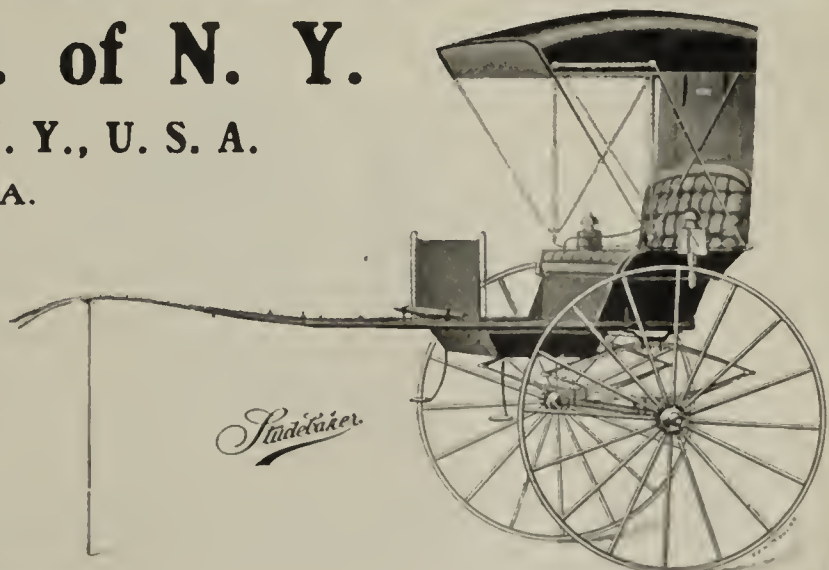
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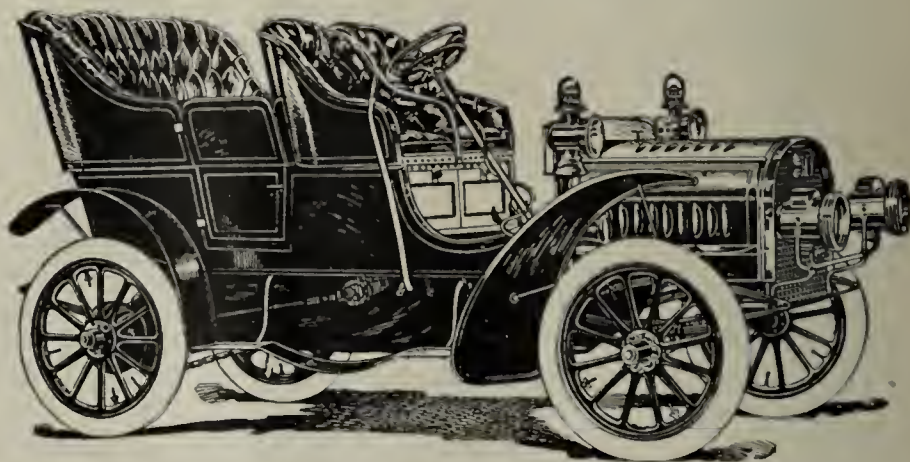
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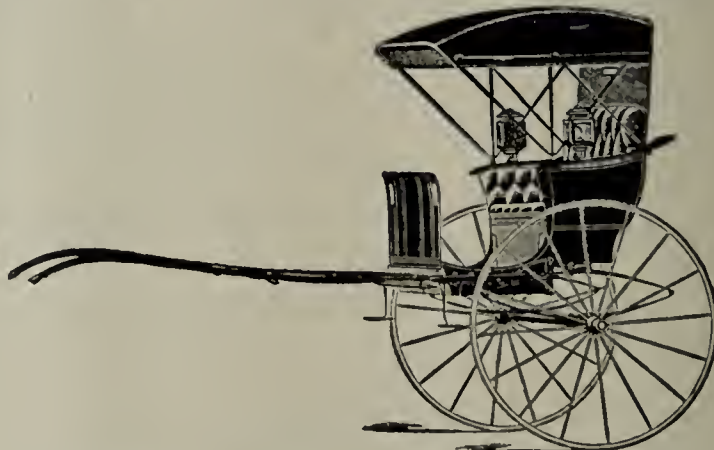


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Vol. LVI.

NEW YORK, AUGUST 1, 1905.

No. 3.

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American Trade in the Far East.

[Special Cablegram to the AMERICAN EXPORTER.]

TOKIO, Japan, Aug. 1, 1905.—Secretary Taft and party have arrived and are receiving a most cordial welcome on the part of the Japanese Government. Have enjoyed unusual opportunities for interviewing officials and leading merchants relative to American trade with Japan, which I find to be rapidly increasing. The outlook for the immediate future is splendid.

With reference to Japan's commercial policy in Manchuria, Corea and China, I am personally assured by Marquis Ito and others entitled to speak with authority, that the "open door" policy will prevail, and these great countries thrown open to the world's trade. The threatened boycott of American goods by the Chinese is not considered at all serious in this part of the world. Mr. Harry R. Burrill, the special agent of the Department of Commerce and Labor, is proceeding at once to Shanghai for the purpose of thoroughly investigating the matter. The leading papers of Japan have shown a great deal of interest in the foreign tours of Mr. Burrill and Mr. Crist, representing the Department of Commerce and Labor, and of the representative of the AMERICAN EXPORTER.

Other comments indicate that they appreciate the increased interest being shown by American manufacturers in the commerce of the Far East. The *Advertiser*, which is Yokohama's daily American newspaper, published five hundred words on its front page yesterday, relative to this subject.

W. J. JOHNSTON.

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Secretary Taft in the Orient.

The present issue contains an account of the farewell banquet given by the merchants of San Francisco to the distinguished party accompanying Secretary Taft to the Far East. As we go to press, a cablegram brings the welcome information that the party has safely landed in Japan, where a most enthusiastic welcome on the part of the Japanese Government awaited them. Decorations and salutes greeted their arrival, and the most distinguished honors have been paid to the party. Secretary Taft has been received personally by the Mikado, with whom he lunched in the imperial palace, and other official compliments have been paid to the members of his party.

Before leaving the Mikado's Empire for Hong Kong and the Philippines, Mr. W. J. Johnston, publisher of the AMERICAN EXPORTER, who accompanies the party, will improve the opportunity of investigating commercial conditions in Japan. An effort will be made to bring the leading merchants of that empire into closer relations with the manufacturers of the United States. That his visit will accomplish direct results is a foregone conclusion.

New York Merchants Favor Reciprocity Treaties.

At a recent meeting of the Merchants' Association of New York City, the subject of reciprocity treaties again came prominently to the front. A committee of five members was appointed

for the specific purpose of urging upon President Roosevelt and other government officials the urgent necessity of taking steps to negotiate reciprocal treaties of commerce with the principal countries of Europe.

That the New York merchants are in earnest in this matter is evinced by the further fact that letters are being sent to the leading merchants and manufacturers of the entire United States, asking them to cooperate in the effort to bring influence to bear upon the officials who have this matter in hand. Since it is generally recognized that the President and members of his Cabinet are thoroughly awake to the importance of America's foreign commerce, it is confidently believed that some favorable action will follow the next meeting of Congress.

The New Secretary of State.

It is doubtful if a President of the United States ever selected a Cabinet Officer who received the approval of the nation to the extent which has been accorded Hon. Elihu Root, the successor of the late Secretary Hay.

Mr. Root is generally regarded as the leading member of the American bar, and has been the intimate friend and constant adviser of President Roosevelt throughout his entire administration. Although sixty years of age, his mind is said to be as fresh and elastic as that of a man half as old, while his experience and judgment are second to none who might be named. As to Secretary Root's patriotism, it need only be said that when he was asked to exchange an annual income of \$250,000 for a salary of \$8,000, the President did not consider it necessary to even discuss the financial side. This is a conspicuous refutation of the charge sometimes made that Americans worship primarily "the Almighty Dollar."

The American Office Building.

The leading article in this number of the *AMERICAN EXPORTER* is devoted to a popular discussion of that American institution commonly known as "the skyscraper." Many foreign merchants visiting America for the first time, have acknowledged the tall office-buildings, outlined against the New York sky line, to be among the greatest surprises that met them on our shores. As will appear from the article, the conveniences and economies resulting from this type of architecture have been abundantly demonstrated, so much so that tall office buildings are constantly increasing, both in number and in size. The former criticism relative to their unsightliness can no longer be maintained in the face of the beautiful structures now being erected.

In view of the movement spreading abroad, looking toward a modification of building laws in order to permit the erection of "skyscrapers" in many foreign cities, this article will contain much of interest to our readers.

A Bonaparte in the American Cabinet.

When Charles Jerome Bonaparte, a grandnephew of Napoleon I, assumed on July 1st the office of Secretary of the United States Navy, a vigorous American personality was added to President Roosevelt's Cabinet.

Mr. Bonaparte is a distinguished attorney of Baltimore, Md., where he was born and reared. He has for many years not only enjoyed the personal friendship of President Roosevelt, but has been associated with him in vigorous efforts in the line of civil service reform, of which both have long been prominent exponents.

His most recent association with the President was in the capacity of special counsel in connection with the prosecution of the officials involved in the postal frauds, whose conviction was secured.

The new Secretary is a grandson of Jerome Bonaparte, King of Westphalia, a brother of the Emperor, who visited Baltimore in 1903 and married Miss Elizabeth Patterson.

Secretary Morton, the former Secretary of the Navy, retires to become the executive head of the Equitable Insurance Company of New York City. He has made an excellent record as a capable official while a member of the President's official family.

The Tariff War with Germany.

The possibility of the enforcement of retaliatory tariff regulations on the part of Germany and the United States is receiving serious attention on both sides of the water. Conservative, well-informed commercial leaders, both German and American, are inclined to regard this possibility in the light of a misfortune to the commerce of both nations.

The quantity of raw products and manufactures imported into Germany from the United States is enormous; it has been estimated that fully 75 per cent. of these imports are necessities that Germany must necessarily buy in the United States. On the other hand, all but a small proportion of Germany's products imported into the United States could be bought from other European countries almost as cheaply; hence it would seem that Germany would be the greater loser should a retaliatory tariff war be inaugurated.

There is every reason to feel that tactful diplomacy will avert this threatened commercial unpleasantness. Relations between the two countries were never more friendly than now, and there has never been a time when the executive heads of the two peoples held more in common. The most recent evidence of the Kaiser's friendly feeling toward the United States is the international yacht race, arranged by the German Emperor, in which his cup was won by an American yacht. With so much in common, and with the manufacturing interests of each at stake, it would be worse than folly for a tariff war to be inaugurated by either.

Chinese Boycott of American Goods.

Advices from China indicate that a more or less spasmodic movement is now on foot, having for its end the exclusion of American goods from that empire. That this enterprise will be successful no one for a moment believes, but a great deal of unnecessary prejudice will, of course, result. The proposed boycott is intended to be merely temporary, since it is altogether a retaliatory measure.

That this boycott is ill-timed will be apparent to all. It follows immediately upon positive instructions by the President, ordering immigration officers not to exercise stringency in the enforcement of existing laws. The effect of this order was immediate. Of the 311 Chinese who applied during June for admission into the United States, 300 were allowed to enter. This is the highest percentage of admission for a long time.

In the present issue will be found an extract from an address by Secretary Taft, which is understood to echo the sentiments of the Administration on this question. The further fact that the merchants of the Pacific Coast are beginning to advocate leniency toward the Chinese is also significant of a change of sentiment. It is unfortunate that while these advanced steps are being taken by the United States, the merchants of China should imperil their cause by precipitate measures.

DEPARTURE OF SECRETARY TAFT'S PARTY.

The banquet tendered to Secretary Taft and the distinguished members of his party, which took place at the Palace Hotel, in San Francisco, upon the eve of their departure for the Philippines, was not only a brilliant affair but one of great significance. The possibilities which are likely to spring from this tour are boundless, and it will mean much for the trade of the United States and the future of the Philippines.

The interest in the gathering centers largely around the speech of Secretary Taft in replying to the toast, "The President of the United States," in which he uttered some pregnant sentiments supposed to reflect the policy of the administration as to the Oriental situation.

Mr. Taft began his remarks by a touching allusion to the late Secretary Hay, the President's nearest friend, he said, after which he continued as follows:

"And now, 'The President of the United States.' I wish you could know him as I do. And why should I wish that? For you do know him as I do. There is not anybody in this United States that does not know Theodore Roosevelt. He has not one atom of conceit, he wears his heart on his sleeve. He cannot even keep a state secret, but must confide it to the people the next day. Earnest in his high purpose, strenuous in his actions, having the highest attainable ideals, and knowing no 'tired feeling' in his ambition to make and keep this country the greatest on the earth, certainly we can congratulate ourselves in having such a chief magistrate."

The Philippine deputation was a matter to which the President had given considerable thought long before it was officially announced. "It is all right," he said, "to talk about a 'junket,' but when you make an engagement to take more than a fourth of a year out of your busy lives to devote to public service, I think you will reach the conclusion that it bears some other name than junket. We are going out to see if we cannot more deeply probe the matters and obligations that we have taken upon ourselves in those distant islands."

"The problem in the Philippines is the problem of making the people, whom we are to govern in those islands for their benefit, believe that we are sincere when we tell them that we are there for their benefit, and make them patient while we are instructing them in self-government. No man can play any part who does not love the Philippine people; no man can play any part who does not believe in their future and that they are capable of self-government. They are not yet ready for independence, and if they talk of independence at the present time it is mere wind. I am certain there will doubtless come a solution of the problem."

"No government can be made in two, three, five or a decade of years. It takes time to fit and educate a people, but there is one thing in respect to the Philippines that you cannot emphasize too much—statistical facts. We are organizing a school system in the Philippines and trying to teach them English. We were told that it would be necessary to use force. We did not. We even did not have a chance. We opened schools and taught 100,000 pupils nothing but English. The next year there were 260,000 pupils in attendance, while last year in August we had 362,000 pupils reading, writing and reciting English in the schools, and this year at the close of the school year in less than seven months we will have increased that number to 521,000. I do not care what so-called leaders of 'Filipino talk' may say, those facts

show the pains the people who have children in those islands are taking to have them educated in English. It shows the appreciation of those people and their determination that their children shall be educated in such a way as to know the responsibility of government.

"Self-government is something that will take us a long time to hammer out. A year from next spring they are going to have a popular assembly in the islands. There will be not less than fifty or more than one hundred members attending, men having special qualifications, chosen by municipal electors and speaking Spanish or English. That first assembly will be very curious in the legislation introduced, for they have an idea that everything under heaven can be accomplished by legislation and the number of bills introduced to change conditions in social and political life will be confusing; but when one member shall see the absurdity of the proposition of another, you have begun the road leading to common sense, or in other words, you have a school in which they must learn the problems of government. They must learn that self-government is not obtained by sitting down and writing out theories."

The party will be entertained by the Honolulu Board of Trade, which is anxious to increase the business of Hawaii with the mainland; by the Japanese Government, which desires closer commercial relations with the United States; and for more than a month will be the guests of the Philippine Government, which wishes railroads built and industries in other lines developed.

The personnel of the distinguished party is as follows:

Hon. Wm. H. Taft, Secretary of War; Colonel C. R. Edwards, Chief of the Bureau of Insular Affairs; Senators Dubois, of Idaho; Foster, of Alabama; Long, of Kansas; Newlands, of Nevada; Patterson, of Colorado; Scott, of West Virginia, and Warren, of Wyoming; Representatives Cockran, of New York; Cooper, of Wisconsin; Curtis, of Kansas; Dearmond, of Missouri; Dressler, of Pennsylvania; Driscoll, of New York; Gilbert, of Indiana; Gillett, of Massachusetts; Grosvenor, of Ohio; Hepburn, of Iowa; Hill, of Connecticut; Howard, of Georgia; Jones, of Virginia; Landis, of Indiana; Longworth, of Ohio; Loud, of Michigan; McKinley, of Illinois; McNary, of Massachusetts; Otjen, of Wisconsin; Parsons, of New York; Payne, of New York; Scott, of Kansas; Sherley, of Kentucky; Smith, of Illinois, and Wiley, of Alabama.

Capt. J. K. Thompson, Aide-de-Camp to Secretary of War; Gen. T. H. Bliss, U. S. Army; Mr. James A. LeRoy, Durango, Mex.; Mr. Wm. S. Reyburn, Washington, D. C.; Mr. Rogers K. Wetmore, Newport, R. I.; Mr. Arthur H. Woods, Groton, Mass.; Mr. Fred E. Warren, Cheyenne, Wyo.; Hon. Emile Godchaux, New Orleans, La.; Hon. Chas. F. Joy, St. Louis, Mo.; Hon. Lafe Young, Des Moines, Ia.; Mr. J. G. Schmidlapp, Cincinnati, O.; Mr. Stuyvesant Fish, Jr., Washington, D. C.; Mr. Stillman, son of James Stillman, New York; Col. Wm. C. Church, *Pub. Army and Navy Journal*; Mr. Chas. Clark, Editor *Courant*, Hartford, Conn.; Mr. W. J. Johnston, *Pub. AMERICAN EXPORTER*, New York; Mr. Burr McIntosh, New York City; Mr. Geo. Warrington, Cincinnati, O.; Mr. Henry F. Woods, Hartford, Conn., and a number of ladies, including Miss Alice Roosevelt.

The party is due back in San Francisco early in October. Instead of returning with the others, however, Mr. Johnston will, from the Philippines, go via the Torres Straits, Port Darwin and Thursday Island to Australia, Tasmania and New Zealand.

The AMERICAN EXPORTER, having its own representative on this tour of investigation in the person of Mr. W. J. Johnston, will be enabled to keep its readers informed as to the trade situation in the East, which can be thoroughly observed because of the unusual facilities offered to these tourists.

THE AMERICAN SKYSCRAPER.

Its Conveniences and Economies.

As the foreign visitor enters the inner harbor of New York City, the first thing which excites his wonder is the American "skyscraper," and when he eventually steams out of the bay, it is the last evidence of America's greatness to pass under the horizon. There is hardly a large city in the United States which does not have a few skyscrapers among its "sights," and, as their commercial value has been

successfully demonstrated, it is entirely probable that they will go on increasing in numbers. Eventually, the business section of all large cities will be made up exclusively of these structures, owing to their many points of superiority and economy over smaller buildings.

It is entirely probable also that these tall structures will find their way into the cities of Europe at no distant date. At the present time the matter is being agitated abroad. An effort was inaugurated some time ago with a view to securing a modification of the building laws of one of the German cities for the purpose of erecting something akin to the American skyscraper; while the movement was a failure, a very strong

argument was presented and the matter received careful consideration. The wedge having been inserted, it is probable that the subject will be pursued further, with the result that some changes in the German building laws will ultimately be brought about.

The same condition of affairs exists in London. Some time ago a company was organized in the English metropolis for the purpose of rearing a great building on the American plan. It has not yet been possible, however, for the company to secure the desired assent, and the matter is still held in abeyance. Since then, however, some innovations of a decidedly American character have been introduced in the newest buildings, and it is said that the American influence is making itself felt. The large office building has already made its appearance in Johannesburg, Cape Town and other places, being equipped largely by American concerns.

The objection formerly made that the skyscraper was unsightly has been gradually overcome in recent years, until at present it is no misstatement to say that these buildings are positively pleasing to the eye. The tendency at first was to make them

exceedingly straight and square, so that from the standpoint of architectural beauty they were decidedly lacking; but in the most recent examples of the building art, the designers have made innovations that greatly improve the appearance. This has been done principally by the introduction of metal and terra-cotta effects for the exteriors, and in other cases by the utilization of a color scheme in the selection of the material made use of. The Whitehall building is a good example of the latter method. Here a large panel of the front is made of brick of a color sharply contrasting with the remainder of the front. Critics are divided, however, in their estimation of this piece of architectural strategy.

Monument to Modernization.

"Most persons who look upon a modern building," said Mr. Theodore Starrett, president of the Thompson-Starrett Company, "see only the perpendicular proportions of the structure. It simply means to them a 'skyscraper,' which may be higher or bigger than some other structure which they may have seen; but in reality it stands for more than that. It is a monument to modernization, concentration and perfection. It stands for economy of construction and operation, improved sanitary methods, and increased conveniences to the occupants.

"Architectural designing of to-day is so much superior to that of ten years ago that the old type is doomed, and the modern structure will go on multiplying in such localities as there is a demand for it, with the ultimate result that there will not be a mere sprinkling of these structures scattered through the busy section of a great city, as at present in New York, but they will prevail throughout.

"The demand for greater units is as apparent in building operations as in all other trades and industries. It is an age of combination and the big office building generally represents the combination of a number of small parcels. In the Atlantic building, for instance, in which this office is located, are represented no less than four different building operations and enlargements, and in each of these a number of different smaller properties were consolidated. The site of the original building covered many smaller ones; while the structure has already been several times extended, further enlargements are entirely probable. One of the buildings taken in by this march of improvement was a substantial structure, which was regarded as having been built for all time, but it was so small as compared with the present structures that its operation was not economical and it had to come down to make way for a skyscraper.

"The progression noted above holds good of nearly every office-building in New York. The Broad Exchange covers what was once the site of fifteen smaller structures, and as far as I can



THE BLAIR BUILDING,
New York City.



ENTRANCE TO TIMES BUILDING.

see at present, this consolidation will go on until every block in lower New York will be one big office-building.

"The manifest advantages of the large office-building are better light, perfect ventilation, superior plumbing, and more space for tenants; so the modern building does not stand alone for height, but for improvement and modernization."

While, as noted elsewhere in this article, buildings which had been regarded as constructed for all time have been compelled to give way to the march of the modern building, it seems probable that the original skyscraper is now about to be torn down to make way for a structure taller and of more recent type. The Tower building, on lower Broadway, was completed in the fall of 1889, and was one of the earliest types of skeleton construction. Compared with more recent buildings of its kind, it is a pigmy, being only ten stories high. The property has recently changed hands, and the building is said to be doomed to destruction to make way for a twenty-story structure.

There are many higher buildings in New York than that proposed on the site of the Tower structure. The present Park Row building is thirty stories, and one is proposed for a New York newspaper which will have forty stories; but from a commercial standpoint, sixteen to twenty stories is considered the most desirable limit, and one which fairly represents modern building practice.

That the skyscraper is a public utility is attested by the extent

to which it is made use of for public purposes. In the case of the *Times* building, at 42d street and Broadway, a station of the Subway occupies the very basement of the building, and one of

the entrances to the tunnel is through one of the principal doorways of the building. As a matter of fact, the Subway station is reached through either of the imposing doorways of the *Times* building, but one of them has been especially turned over to the use of the patrons of the underground railway. This is one of the most important of the uptown stations, and hundreds of persons enter and leave the Subway at this point every day.

In the case of the United States Express building, which has just been commenced on Rector street, the site of the building is located between two stations of different elevated roads. Hemmed in by these unimposing structures, a view of the new building from any point would be seriously interfered with; in order to dispense with them, it is proposed to place the two stations in opposite ends of the Express building. A further public service performed by the Express building under this arrangement will be the elimination of a homely bridge which exists at this point for the accommodation of pedestrians.

Another feature of the public usefulness of the skyscraper, directly in line with the above, is the proposition to make

use of tall buildings along the route of the Subway for the purpose of properly ventilating the tunnel, which has been found to be very unsatisfactory, complaint having been constantly made by



THE TIMES BUILDING,
New York City.

those who were compelled to make use of the underground lines to get to and from their homes and business places. In order to introduce a supply of fresh air into the subterranean passage, it has been suggested to carry flues to the top of the tall structures



DECEMBER 28, 1903.

along the route, and in this manner draw down below the earth's surface some of the best atmosphere obtainable, for the renewal of that which has become fouled.

The Blair Building.

The Blair building, on Broad street, probably represents the most approved form of office-building. The stamp of approval is in the shape of a tribute paid to it by the fire insurance companies, which have accorded this building a rate lower than that of any similar structure. It is of stone and terra-cotta construction, located on a rather small piece of real estate of triangular shape, which permits of a very satisfactory arrangement in the disposal of the elevator shaft and light-well. This part of the structure



FEBRUARY 29, 1904.

forms a part of the building entirely separate from the main structure, the space between the elevator shafts and the main part of the building answering the purpose of a light-well, and at the same time protecting one part of the building from the other in the event of fire. The doors on every floor, which are necessary to

make this isolation complete, are of an automatic type, closing themselves by the action of the heat from the flames. These doors, having been closed, the spread of fire beyond the place of origin is said to be impossible. A desk might catch fire and burn, but beyond the inconvenience caused by the smoke it could do no more serious damage.

In the architectural adornment of the façade, the lines of the building have been delightfully broken by embracing the central windows of the building into long panel formations. This is accomplished by the ingenious use of bronze window casings. The coloring is very harmonious with the remaining part of the structure. Besides the fireproof feature mentioned above, all the wood-work used in the interior is of fireproof mahogany. There are also the usual precautions of the hose and reel, and other facilities for the extinguishment of fire.

From the engine-room in the basement to the top floor, the Blair building seems to be a model of construction and luxurious convenience. The engine-room, while containing more machinery to the square foot than any other building in the city, does not seem to be overcrowded, and it is maintained at a comfortable temperature by means of a ventilating system which employs large fans, some carrying off the warm air and others bringing in a supply of fresh air taken from the upper part of the building.

An engine-room such as this presents a sharp contrast with that which was the general thing a few years ago. Then the darkest hole of a cellar was good enough for the purpose of housing the engine, and little or no effort was made to keep it in any condition of order or cleanliness. Not so to-day. The engine-room of the Blair building, which is only typical of many others, has a floor of white tiling, plenty of light, good ventilation, which makes the interior tolerable at all times, costly marble panels on the wall for the accommodation of the various gauge indicators, and similar engine-room essentials. In this particular instance, the gauges are all illuminated and placed at such an angle that they can easily be read by the engineer from his chair at the desk in the center of the room.



APRIL 23, 1904.

The Times Building.

As a commercial building, that built by the New York *Times* on a trapezoidal piece of land bounded by 42d street, Broadway, Seventh avenue and 43d street, is unique in a great many respects. In the first place, there is more of the building under the ground than in any other structure ever raised. On account of the exposed situation of this building, it was necessary to make an excavation so great that it resembled a modern quarrying operation. In order to get the proper kind of foundation for this building, it

was found essential to go down to rock bottom, and in the accomplishment of this undertaking many difficulties were experienced. The bottom of this hole was several feet below the level of the rivers, only a mile away on either side, and at different times the



MAY 14, 1904.

contractors for the excavating work were seriously hampered by the accumulations of water which flowed into the big hole. In addition to this, the hole was nearly filled on one occasion by the bursting of a water main and the aggravating experience was made worse by reason of the fact that the accident occurred in the middle of a severe winter, and the water froze as it passed into the hole.

To accommodate basements and sub-basements to the depth of fifty-five feet below the level of the pavement, an excavation of 1,003,615 cubic feet was made. The ordinary mind cannot, however, comprehend what these figures really mean. The cubical contents of that part of the *Times* building above the sidewalk is about one and a quarter million cubic feet. The total amount of the excavation is not much less than the whole of that part of the building which can be seen by the spectator standing on the sidewalk. Again, fifty-five feet in depth is almost sufficient to accommodate an ordinary five-story building. These comparisons may help us to realize the importance which is attached to the construction of the retaining walls of such an excavation. This was only one of a great many obstacles which present themselves in the performance of an undertaking of this kind. The complexities of the labor situation offered a more serious en-



JUNE 18, 1904.

barrassment in the case of the *Times* building and the completion of the structure was seriously delayed.

An interesting feature of the *Times* building is the fact that the Subway passes directly through the cellars, cutting off considerable of the floor space, but despite this fact the structure has a relatively greater floor space underground than any other building in the city. This is due in a great measure to the fact that the building is sur-

rounded by wide avenues, and this permits the burrowing out under the sidewalk in all directions.

The fact that the Rapid Transit Commission had the supreme

right of way, which forbade any obstruction to the alignment of the Subway tracks, made it necessary for the columns supporting that part of the *Times* building which is above the tunnel to be placed where they could go inside or outside of the wall line to accommodate the Subway, and not where the preference of the architects or the customary practice in steel construction work would have located them. This required considerable maneuvering, and the difficulty was overcome by resorting to the use of cantilever construction, by which the two structures are entirely independent of each other without the least sacrifice of solidity. The most rigid tests were made with a view to ascertain-

ing the amount of vibration which might be imparted to the building by the passage of the trains, but the ordinary instruments used for this purpose showed only the slightest indication of vibration when the tests were made in that part of the building immediately in the vicinity of the tunnel.

The progress of the work of constructing a modern building of the character referred to in this article is beautifully demonstrated in the accompanying series of cuts of the building for the Union Bank, of Canada, at Winnipeg, which are produced here through the courtesy of the Thompson-Starrett Company of New York. They show the work from the very start to the completion, and the dates under each cut indicate how one of these structures seems to spring from the ground after the work is once started.

Rich Decorations of the Trinity Building.

Because it is one of the most recent of the additions to the skyscraper group of New York, the new Trinity building, towering historic Trinity church and yard, is probably one of the most interesting to the casual observer. There are some features which make this structure remarkable, notably, the ornate finish, and the fact that the structure is regarded as a Wall street annex, because of the aristocratic character of the individuals and corporations occupying the suites and floors. The list of tenants, as shown by the directory in the hall, comprises the most powerful concerns in the



JULY 2, 1904.



JULY 20, 1904.

world, many of them controlling the world's products in that particular line of business to which they are devoted. In the interior, as well as without, a great quantity of bronze has been made use of, and this, combined with rich marbles of delicate veining, gives the inside of this structure an appearance greatly



THE NEW TRINITY BUILDING.

in its favor when compared with some of the less pretentious yet larger architectural efforts located in the vicinity.

This part of New York City is rich in historical associations, and it is an interesting fact that the Trinity building stands on the site of what was the first building in New York devoted entirely to offices. The site of the building, with the famous churchyard on one side and open streets on the three others, gave the architect, Mr. Francis B. Kimball, a magnificent opportunity for effective work; that he has made the most of this chance is evidenced from a survey of the splendid façade on the churchyard side of the structure. This building is 41 feet 6 inches in width on the Broadway front, and widens out to 46 feet 6 inches in width at the rear, facing on Trinity place. Its depth is 204 feet. The building is twenty-one stories in height, and rises 290 feet above the level of Broadway. The building has a basement which is reached by a broad flight of stairs and comes out on the street level on Trinity place. From this there is a further short flight leading to a continuation of the Rector street station of the Subway. The power plant in the cellar is fitted out with turbines for driving the generators, and comprises the most up-to-date installation of this character; it is notable for its great compactness as compared with the reciprocating engine.

The foundations of the building consist of fifty caissons, thirty-two of wood and eighteen of steel. These were sunk to an average depth of eighty feet below the curb, and were completed in fifty-one days, which is a speed record for this class of work. The thirty-two caissons form an almost continuous wall around the four sides of the lot, while the eighteen steel caissons run on the central axis from Broadway to Trinity place.

Considering the building from a decorative standpoint, the Broadway entrance presents a study of considerable beauty. As

we face the building, there is to the right the handsome bronze and limestone entrance executed in Gothic detail modified with a strong touch of modern feeling which adds greatly to the interest and beauty of the work. As one enters the building, the great array of bronze marble and gold-leaf cannot but excite the admiration. The amount of rich material massed in the great length of the corridor impresses the visitor at once. The metal-work is the special feature of the halls, although the other appointments fall but little behind. It is said by competent judges to be the finest example of this class of architectural adornment to be found in America. The bronze elevator fronts, ten in number, are, perhaps, the triumphal feature of the whole, as far as the hall equipment is concerned. The vestibule is in Sienna marble, with a high elliptic Gothic vault above. In the other halls of the building, English-veined marble has been used. Through the main corridor, above the marble wainscoting, a beautiful mahogany screen with stained leaded-glass windows of trefoil design add to the beauty of the hall. Grotesque brackets, consisting of gnomes crouching under the open ends of the beams, support them.

The Trinity building was erected in the short space of one year, and, taking into consideration the remarkable character of the structure, and the elaboration of the finish, this is considered a speed record. In this connection, the stonecutters did a notable performance for rapid work, for the first piece of stone was set in place on August 19, 1904, and the last was placed in position on December 20th, of the same year.

The battery of elevators is always an interesting part of a



ENTRANCE TO THE NEW TRINITY BUILDING.

great building of this character. The Trinity building has eleven of these, divided into two groups of five each, the other being a

freight-carrier. The first group of elevators from Broadway are all local to the eleventh floor, while those of the other group are operated to the top of the structure. The elevators are of the plunger type, the borings having been made to the depth of three hundred feet below the level of the basement.

The Weight of a Skyscraper.

Upon the occasion of the dedication of the *Times* building, the following calculations of the weight of that structure were made:

	Pounds.
Structural iron.....	7,424,000
Brick	19,430,000
Cement and mixed mortar.....	14,662,000
Plastering	2,214,000
Ornamental iron.....	500,000
Terra-cotta	3,662,000
Wood	1,472,000
Sand	2,364,000
Marble	630,000
Terra-cotta arches, partitions, etc.	5,024,000
Electrical conduit, etc.....	622,000
Heating and plumbing.....	700,000
Vault lights	84,000
Sidewalks, fill, etc.....	146,000
Cinders	616,000
Air-sweeping system, risers and outlets, mail chute and box, pneumatic tubes	28,000
Hardware, sash weights, etc.....	69,000
Limestone	2,700,000
Granite (ashlar only).....	390,000
Roofing, tile and skylights.....	94,000
Glass	56,000
Elevator guides, sheaves and cars.....	68,000
Kalamein iron frames and sash.....	80,000
Rubble masonry in back fill, exclusive of 2,360,000 pounds of cement	14,880,000
Contents, including machinery, water in tanks, furniture, etc. (estimated)	5,000,000
Total	\$2,923,000

New Structures in Contemplation.

The new United States Express building, which has already been referred to, will be a twenty-three-story structure, having a frontage of 118.7 feet on Rector street, with two wings facing on



CORRIDOR OF TRINITY BUILDING, SHOWING BATTERY OF ELEVATORS.

Greenwich street 133.9 feet, and 142 feet on Trinity place. It is to have a face of granite for the first five stories, and terra-cotta with brick trimmings above that. It will be equipped with ten passenger elevators. The cost will be \$1,000,000, according to the estimate of the architects.

Before leaving for Europe Mr. H. C. Frick, the steel magnate, announced that he had in contemplation the erection of two buildings in Pittsburg which would make that city talked about all over the world. One is to be an office-building, which will

cost \$10,000,000, and will be the finest thing of its kind. It will be reared directly opposite the Frick building, in that city. The other structure referred to is a hotel, which will cost the same amount of money, and it is the intention of its projector that this shall also overtop, in point of elegance of furnishing and equipment, anything else to be found. It will occupy the greater part of a large block in that city. It is said that Mr. Frick's purpose in these operations is merely to give his city these facilities out of local pride entirely.

Cape Breton Mail Route Not Feasible.—Sir William Mulick, Postmaster-General of Canada, took occasion recently to make the prediction that the time would come when the entire mail traffic between the British Isles and the North American continent would be handled by Canadian lines. This, he said, would be brought about by reason of the fact that Cape Breton is three hundred miles nearer Liverpool than is New York. He argued that this should give the Canadians a distinct advantage over the American companies.

While this geographical advantage is conceded, there are certain climatic conditions which would prove a serious obstacle in the matter of handling the mails, and for this reason the management of the American companies fail to see any immediate prospects of this business being taken from the lines of this country.

Manager Higbie, of the White Star line, says that it would be impossible to run fast steamers from that part of the country on account of the dangerous fogs and icebergs which prevail for a very considerable part of the year. The scheme, he says, has been suggested before, but no effort has ever been made to carry out such a project. If the plan had been considered entirely feasible it would have been tried before this.

What is regarded as another obstacle is the difficulty which would be experienced in working up any considerable passenger traffic, which is a very essential factor in the mail transportation business.

World-Wide Demand for American Products.—Private cablegrams from Tokio announce that the Japanese Government is to issue for the province of Korea a new copper coinage, which will require about 40,000,000 tons of copper. Such a move will absorb a large portion of the output of the Japanese copper mines and increase the demand for the American product. The United States is the world's greatest exporter of raw materials. It is a fact mentioned without boast, that when other nations need natural products, they turn at once to America. But, besides our cotton, coal and metals, the world is beginning to realize that our finished products are the best and cheapest obtainable.

Plans for a World's Peace Court.—The Inter-Parliamentary Peace Union, according to Congressman Bartholdt, its president, is to appoint a committee to draft a model treaty for establishing the world's peace. The subject will come up at a meeting to be held in Brussels on August 28th. This movement, in which America is lending a willing hand, deserves the warmest commendation. The recent settlement of the Baltic fleet incident in British waters has demonstrated that a court to decide all international disputes is thoroughly practicable. With an established court of arbitration it would be as easy to maintain peace throughout the world as in one single nation.

THE CHINESE CRISIS.

A number of interesting and important developments in relation to the Chinese boycott incident have taken place since our last issue. The most important is probably the address of Secretary Taft, in San Francisco, just before sailing for the Philippines, who expressed himself in the following positive manner:

"If I had not been interviewed and made to take so many different positions on the Chinese question, I would not think it important to re-state my position in the matter. I know Californians have a definite view, and my view generally is this: We have reached a point in the life of our nation where we are to be treated by other nations as 'adult male,' where we expect from other nations the same measure of courtesy and justice as we would mete out to them. I understand that all nations of the world know that we are not obliged to make this continent a dumping ground for their beggars and robbers and bad people generally, and therefore we may pause properly and still stand up and look them in the face.

"I also understand we have informed the Chinese nation that its coolie class does not amalgamate and become citizens and that therefore we exclude them. That has been understood by the Chinese government and recognized by us. But on the other hand, we have refused entry to Chinese merchants and students whom it would be an advantage to this country to admit. We should keep with the Chinese nation the advantage that we have by reason of the fact that it believes we are not land-grabbers in the Orient and desire to do justice—a position of advantage given us to secure the immense Chinese trade awaiting development on the Pacific Coast.

"And shall we pursue the policy that will insult Chinese merchants and students and destroy our advantage with China in international affairs? I say no. And the State of California will say no if the State knows her own interests—not only the wealthy men, but the laboring men. The laboring men are the bone and sinew of the country, and every time you increase our trade by one hundred millions, seventy-five millions are going to the laboring man. Is it possible for the interests of labor that we will find it necessary to fling insulting measures in the face of China?

"I hope I have made plain my view on the Chinese question. I am not criticizing the enforcement of the law. If by treaty or law it is necessary to insult, then those laws should be repealed."

The following editorial comment on these remarks was made by the *San Francisco Call* the day following:

"Secretary Taft, in language that is incapable of misconception, has made plain his attitude toward the classes of Chinese who are exempt from the exclusion law. When he and the President declared that these exempts should have their rights, and that instead of being treated as criminals they should receive the courtesy due to their character, both were accused of nullifying the exclusion law.

"The fact as to that law is, that China assented to it, and provided for it in the treaty, and so far as known that Government has never sought to evade it. But the Chinese are a commercial people. It is generally admitted that in all Asia the best, most enterprising and most honorable merchants are the Chinese, together with the Parsees of Bombay. In Eastern Asia, Java, Ceylon and the Straits Settlements, the Chinese merchants and bankers are the great commercial and financial force. Our Asiatic

trade is especially dependent upon their good will and participation. If we were the only source of their supply of merchandise, we might afford to overlook their assistance, but we have, in Great Britain and Germany, competitors who are keen to take advantage of our mistakes.

"No greater mistake could be made than to class all Chinese as coolies and deny to them the rights of man. It is this mistake that Secretary Taft and the President insist shall not be made. They abate none of the vigilance required for the enforcement of the exclusion against the forbidden class, but insist that its rigors shall not apply to the exempts."

It has also been announced that, on behalf of the Chamber of Commerce of Portland, Ore., a letter has been sent to President Roosevelt by the president of the Chamber of Commerce of that city, Mr. William D. Wheelwright; the letter urges the President to take some steps to secure a treaty with China by which merchants, students and professional men of that country may be enabled to enter and leave this country without unnecessary embarrassment. The letter also pleads for the absolute freedom of all Chinese residents of this country to visit their own land and return here, and for the admission during the next ten years of a number of male Chinese laborers that in any one year shall not exceed one-tenth of 1 per cent. of the population of this country.

Since the Pacific Coast is the section of the United States which has most strenuously opposed the admission of Chinese into the country, this action on the part of Portland's business men is significant of a change in attitude.

From Shanghai, under date of July 20th, comes the announcement that about fifteen hundred persons, including representatives from many guilds throughout the provinces adjacent to that city, held a meeting and inaugurated a movement looking to the boycotting of American goods and the ostracizing of all persons who continue to make use of goods from the United States. It was decided to circulate considerable literature to work up a sentiment against American products, and this work was commenced at once by the distribution of a tract, which of itself was a tiny affair, but which, translated, filled nearly a column of the average American newspaper. Such precipitate action is a hindrance to efforts now being put forth to remove the objectionable features of the immigration law, and is to be deplored.

The fears that the American trade would be seriously hurt by these movements in China have been somewhat allayed by the return from China of John E. Wilkie, chief of the United States Secret Service, who has investigated the movement to boycott American goods in that country. After having examined the situation in Hong Kong and Shanghai, he says that the movement is not of such proportions as to cause any alarm whatever, and cannot seriously affect the American trade.

America's Trade with Australia.—The present year is apparently destined to witness a great expansion of the trade between Australia and America, says *Commercial Intelligence*, of London, referring to several heavy cargoes from the United States now on their way to Australian ports. In these cargoes is included everything from agricultural machinery to shoeblacking. England sends the same articles to that commonwealth, but it appears that American goods are more desirable. They are cheap, and of a quality that the manufacturers of the United Kingdom cannot excel.

REVIEW OF THE PHILIPPINE TRADE.

The eyes of the industrial world are centered on the development of the Philippine trade, and every effort is being made in the United States to nourish the possibilities of the islands to the fullest extent. The tour of Secretary Taft and his distinguished guests through that part of the Far East is an evidence of the importance with which this field is viewed. The AMERICAN EXPORTER will soon be in a position to publish material which will embody the latest information obtainable, gathered by its special representative, who accompanies the party. In the meantime, other authentic data concerning the commerce of these islands will be perused with interest. A notable contribution to the literature of the subject has been recently issued by the Insular Bureau of the United States Government in the shape of an historical review of the Philippine commerce, being an analysis of the trade under Spanish and American occupation.

The difficulty attached to the compilation of such a report is the incompleteness of the data obtainable. There are many breaks in the records; the most regrettable being the absence of figures from 1868 to 1872 inclusive, which is coextensive with the opening of the Suez canal. There are many other similar but less extensive interruptions in the continuity of the records. From this valuable summary, the December issue of which has just come from the press, the facts below have been gleaned.

The average annual value of shipments from the archipelago has been somewhat in excess of its purchases, as is usually the case with imperfectly developed countries. In 1855, with an export trade of six million dollars and five million dollars' worth of imports, a million was left to the good of the islands, and, with an occasional exception and variation in the proportions, this was the general condition to the end of the Spanish régime. The islands' trade for this period reaches its maximum in 1880 and remains about stationary for the remaining fifteen years, including gold and silver approximated at the annual value of a million dollars each in imports and exports, with a balance in favor of exports of about three million and a half; but it is a point worthy of note, in view of the construction that is often put upon the significance of such a balance, that imports, after reaching a maximum in 1880-1884, actually decline in the face of practically stationary exports, thus showing an increased average of this apparent prosperity with a trade balance of over four million and a half during a decade that ended in revolution.

This balance of trade has met with a complete reversal in American times in the face of imports that are nearly double and exports that show large increases over the closing figures of the Spanish régime. About two million are shown in 1900, five and a half million in 1901, nearly five million in 1902, a million and a half in 1903, and less than half a million in 1904. There has thus been a balance against the islands that reached its maximum in 1901 and, steadily declining, has almost disappeared in 1904.

This so-called adverse balance of trade has been considered a reproach upon American administration in the light of Spanish conditions by those who are disposed to reduce national exports and imports to the elementary terms of personal income and expenses; but the subject is a far broader one, and this disparaging inference does not seem warranted when other factors are considered which are involved in these trade totals.

That the industrial energies of the people have been greatly stimulated contemporary with American occupation, in spite of

insurrectionary disorders and misfortunes beyond human control, is evidenced by the large increase in exports. These, during the last five recorded years of Spanish rule, averaged a scant twenty million dollars and cannot be assumed to have increased appreciably in the years following, in view of the fact that exports had remained virtually stationary at this average from 1880. Yet in the American quinquennial period under review these average exports of twenty million become about twenty-seven and a half million, and testify to the stimulated productiveness and increased purchasing power of the islands.

On the other hand the declining imports, which average about sixteen million in the closing Spanish period, exceed thirty million in 1900-1904. It is not intended to consider the significance of declining imports and a growing balance in trade as elements of prosperity in a country in view of the revolution that followed, but into the heavy imports in American times it is worth inquiring, with the preliminary comment that this side of the islands' trade under the opening years of American administration involve features that play little or no part under the established conditions of earlier years.

The shrinkage of over half in the sugar exports coincident with the American occupation has been generally accredited to insurrectionary disorders and other local causes, but it is a general penalty that extreme cases for regeneration must be preceded by destruction, and the Philippine sugar industry seems to be undergoing the drastic preliminaries of a reorganization on a modern basis.

In a general survey of the tobacco industry as it now exists, the manufactured product presents little of special note beyond the fact of practically stationary exports during the past fifty years. This, however, does not indicate that production has made no progress. On the contrary, it seems probable that domestic consumption has made great progress under free conditions. The local consumption exceeds half of the production of the islands and in the face of such a demand, stationary exports would seem to be entirely consistent with the enormous increases in the manufactured products during the half century.

The copra, the infant industry of the islands, has developed in the past few years, but now forms one of the preeminent features of the trade. In 1892 this item reached three-quarters of a million of dollars in value. In 1894 it amounted to \$1,172,191. The future of this industry is very bright, and while it can never be a monopoly in the same sense as hemp, the plant has so many uses and grows with such luxuriance in the islands that it will in all probability keep on expanding.

Exports of coffee from the Philippines have long since ceased to be of any importance and its interest is chiefly historical. Much has been said about the revival of the coffee trade and the aid of an American import duty on coffee in connection with free trade for the Philippines as a means to this end. It may be regarded as an asset, in a way, for the rich profits of these plantations is a matter of record; but, on the other hand, that is offset by the tedious development of the coffee plantation, requiring outlays of capital from six to twelve years before any returns are made.

In view of Secretary Taft's well-known interest in the prosperity of the islands which he so ably governed in a most trying period, it may be confidently expected that he will return from his trip of inspection with many practical plans for the development of the Philippine commerce.



WALLABOUT BASIN, BROOKLYN, N. Y.

NEW YORK HARBOR—FIFTY MILES OF WHARFAGE.

By F. G. Bailey,

President of the Export Shipping Company.

While figures do not lie, they often fail to make an impression on the mind, so it is futile to speak in figures of the enormous tonnage of the port of New York, which is next to London in importance. The natural advantages of the harbor have been enhanced as far as possible by the Dock Board under municipal control and it now presents to the vessels calling at the port such facilities for loading and discharging quickly as can be found nowhere else in the world.

The principal commercial section of New York City is on Manhattan Island, which is twelve miles long by from one-half to two and one-half miles wide. On the west is the Hudson River (called the North River), one mile wide and navigable for deep-draught vessels to a point some distance beyond the city limits. On the east is a continuation of Long Island Sound, called the East River, connected at the north end of the island with the Hudson through the Harlem River. Across the East River from Manhattan is the Brooklyn section of the city, and this river furnishes dock facilities for a distance of five miles on either bank. At the south of Manhattan Island is New York Bay—twenty miles from the ocean, sheltered on all sides, and capable of furnishing a perfectly safe anchorage for all the navies of the world. The Brooklyn section extends along the shore of the bay, and with the indentations, both natural and artificial, furnishes an additional twelve miles of docks and repair stations. In the center of the bay is Staten Island, sixty miles in circumference,

three miles of which are used for docks by railroads and the United States Government; it also furnishes anchorage for war vessels and those of the Lighthouse Department.

Across the North River from Manhattan is Jersey City, and while this is in the State of New Jersey, is included by the custom house authorities in the port of New York. This city furnishes twelve miles of docks. The Manhattan North River docks are two hundred feet wide and twelve hundred feet long. In other words, these dimensions are equal to the length of six city blocks and the width of one—each dock capable of providing loading and discharging facilities for two 20,000-ton ships, allowing each boat to discharge and take on cargo at the same time, and providing storage for the entire cargo discharged, as well as that accumulated for the outward voyage. Between each dock is a clear space of four hundred feet, which permits barges and lighters to be placed alongside of each steamer on the side farthest from the dock and allows the steamers to discharge and receive cargo on both sides simultaneously. As four-fifths of the cargo come from inland places, and all the railroads with one exception now have their terminals across the river from Manhattan, it becomes necessary to unload the freight cars and place the goods on barges or lighters to reach the steamers; thus all grain is unloaded into a floating elevator in bulk, towed to the ship's side, and elevated into the vessel, being handled entirely by machinery.

The same class of dock is provided for the Jersey City terminals of the large transatlantic lines. It is possible at one of these large docks for a liner to arrive Thursday, discharge her cargo and take on ten to fifteen thousand tons of freight with such facility as to permit the boat to leave port on Saturday. In fact, it is often necessary to do this in winter, when stress of weather prevents a liner from reaching port on time and yet she is required to make her departure according to schedule advertised.

Dredges are constantly employed in removing the ooze and rubbish in and around the docks and bay to maintain a depth of water capable of accommodating the large vessels engaged in the trade of the port. The East River being somewhat narrower than the North River, the docks on the east side are not so imposing, and cater more to the smaller steamers and sailing vessels in the coastwise and West Indian trade, while the Brooklyn docks are kept busy with vessels plying to South America, Africa, Asia and Australia.

It is a remarkable fact that although ship-building has ad-



PIERS 38 AND 39, NORTH RIVER.

vanced and the average size of ocean vessels has increased by one-half, the departures for each foreign port grow more frequent year by year, the demands for tonnage and space often exceeding the supply. The ports of Baltimore, Philadelphia, Norfolk and Boston have also taken large strides in the increase of their receipts and shipments, on account of favorable rail rates on some classes of business and also on account of geographical position; this is perhaps a blessing in disguise and may at some time prove to be a distinct advantage to New York, for the reason that valuable and perishable cargoes will always be handled through the New York port, because of the faster service, and even the enormous facilities of that city may soon become overtaxed to take care of this class, forcing the rough cargo of coal, iron and raw products to the other ports.

In the ten months ending April, 1905, the net tonnage of vessels entered and cleared at the New York Custom House was as follows:

Entered steamers.....	6,544,122	Foreign
“ “	954,389	American
“ sail.....	241,138	Foreign
“ “	64,604	American

Total7,804,253 Net tons

Cleared steamers.....	6,290,899	Foreign
“ “	979,060	American
“ sail.....	236,862	Foreign
“ “	41,651	American

Total7,548,472 Net tons

or a total of 15,352,725 net vessel tons for ten months, as compared with the following totals of other ports:

	Cleared.	Entered.
Baltimore	2,145,714	2,027,858
Philadelphia	2,831,850	2,926,471
Boston	3,552,010	4,395,252
Total three ports.....	8,529,574	9,349,581

Thus there were entered and cleared at these three ports 17,879,155 net tons, as compared with 15,352,725 at New York alone.

The figures show the volume of the business of the port for ten months, which it will be seen has overtopped that of any previous year. With the marvellous shipping facilities of the port of New York at present enjoyed and the improvements in prospect and under way, there is little doubt that it will soon occupy the place at the head of the list of the world's seaports.

The business of the port of New York for the year ending June 30, 1905, overtopped all previous records. The exports and imports for the year, as shown by the report of the Collector of the port, reached the following enormous totals:



NORTH GERMAN LLOYD PIER, NORTH RIVER, HOBOKEN, N. J.



ATLANTIC BASIN, BROOKLYN, N. Y.

IMPORTS OF MERCHANDISE.

For year ending June 30, 1905.....	\$684,497,042
For year ending June 30, 1904.....	600,170,033
Gain over last year.....	84,327,009
Total imports, including gold and silver.....	700,054,551

EXPORTS OF MERCHANDISE.

For year ending June 30, 1905.....	\$506,448,437
For year ending June 30, 1904.....	493,698,208
Gain over last year.....	12,750,229
Total exports, including gold and silver.....	628,493,866

Month by month, the import business exceeded that of the preceding periods. The increased business was generally well scattered throughout the year, but the banner month was March, when the receipts were \$70,546,656, a gain of more than \$14,000,000 over the corresponding month of the preceding year.

Imports of gold and silver for the year were \$15,557,509, a decrease from the preceding year, when the amount was \$29,948,116. The exports of foreign gold and silver were \$6,405,531, against \$2,116,224 for the year ending June 30, 1904. Exports of domestic gold and silver amounted to \$102,149,598, a decrease from 1904, when the total was \$108,398,016.

Collector Stranahan pointed out that although the receipts of merchandise had increased in value, the reciprocity treaty with Cuba had reduced somewhat the amount of duties paid to the Government. The duties collected at this port for the year amounted to \$172,547,960.06, while those for 1904 were \$170,972,544.69.

Automobiles, diamonds, jewelry and fine laces were brought into this country in larger quantities than ever. As they are classed as luxuries the increased imports were regarded as indications of the general prosperity of the country.

Sugar imports this year exceeded those of one year ago by \$25,000,000. The increase was due partly to the fact that sugar was higher in price, but the consumption also increased. In precious stones and pearls the value of the imports was at least \$6,000,000 in excess of the value of one year ago.

New Steel Dry Dock at Nagasaki.—There has recently been completed at Nagasaki, by the Mitsu Bishi Dockyard and Engine Works, for use at their repairing yard which they are establishing at Kobé, a steel floating dock of the following dimensions: Length, 387 feet 6½ inches; length over all, 412 feet 6½ inches; breadth, 85 feet ½ inch; depth, 41 feet 7¼ inches; lifting power, 7,000 tons. This dock will accommodate the largest of the merchant vessels owned in Japan.

THE PANAMA CANAL SITUATION.

A distinguished party of engineers and officials who will preside over the work of constructing the Panama Canal, sailed from this country on the steamer *Mexico* the middle of July; by the time of the appearance of this issue of the *AMERICAN EXPORTER*, they will have entered upon their duties. This party consisted of the following gentlemen:

President Theodore P. Shonts, of the Panama Canal Commission; John F. Stevens, chief engineer in charge of the construction of the canal, and W. E. C. Nazro and Edward A. Moffett, of the welfare department of the Civic Federation, the last two having been engaged by the Panama Canal Commission to solve the recreation problem on the Isthmus.

While on the boat, just before sailing, Mr. Shonts said: "The canal ought to be built in ten or twelve years, if it is a tide-level canal. A lock canal might take five or six years at a minimum. I would not like to guess at a maximum. Of course, this is only a guess. But it certainly is not going to take 110 years, as some one has suggested. I hope myself to see it completed."

Mr. Shonts and Mr. Stevens called on President Roosevelt before their departure and discussed the situation in all its most important relations; all agreed that the energies of the party should be first directed toward the end of securing healthy conditions along the canal, and toward making the place more attractive to the men who are engaged in the work. This latter aim will be accomplished by a systematic movement to establish parks with athletic fields and other attractions for those compelled to make their homes on the Isthmus. By looking after the physical comfort of the men and affording them the means of healthy diversion, it is thought that conditions will be much improved, and the employees made more contented.

The effort to solve the problem of securing labor for the work on the canal was instituted last month, when it was announced that proposals would be opened on August 15th for furnishing 2,000 each of Chinese, Japanese and Italian laborers.

It is not the purpose of the Commission to make a contract with any bidder for labor which will preclude the Government from making direct and individual appointments with each of the laborers furnished. This precaution is taken to avoid any semblance or possibility of involuntary servitude. Under the plan proposed, the contractor will land his laborers on the Isthmus. These laborers will then personally apply for appointment, stating the amount for which they will work. On this application appointments will be made out, the same as in the case of every other employee of the Canal Commission.

The indications are that the bids for labor will vary from 75 cents to \$1.50 per day.

UNITED STATES THE GREATEST COPPER PRODUCER.

Mining experts are amazed by the enormous increase in America's copper output. Figures prepared by Walter Harvey Weed, of the United States Geological Survey, show that the United States supplies nearly 60 per cent. of the entire copper production of the world. The value of the copper output for 1904, which is estimated at \$95,000,000, exceeds that of gold and is surpassed only by that of coal and iron. Of this production about two-thirds were exported.

American copper goes in large quantities to every country in

the world, but there is an immense demand for it in China. In April and May last, the exports to the Flowery Kingdom were over 22,000 tons, an increase from the same months of last year of approximately 6,000 tons. These figures will be largely increased when Japan begins to issue a new copper coinage for the province of Corea. This new coinage will require about 20,000 tons, or 40,000,000 pounds of the red metal. Such action means that China, unable to obtain her usual supply of copper from Japan, will have to turn to the United States for more.

Interesting tables, showing the world's supply of copper, have been published in the July number of the *Mining Magazine*, of New York. These statistics, based on estimates made by Messrs. Henry R. Merton & Co., give the world's production of copper in 1904 as 613,934 long tons of 2,240 pounds each, distributed as follows:

	1903.	1904.
United States	307,570	334,170
Mexico	45,305	50,945
Canada	19,320	19,185
Newfoundland	2,060	2,200
Total North America.....	374,255	406,500
Argentina	135	155
Bolivia	2,000	2,000
Chile	30,930	30,110
Peru	7,800	6,755
Total South America.....	40,865	39,020
Austria	1,055	1,275
England	500	500
Germany	21,205	21,045
Hungary	330	175
Italy	3,100	3,335
Norway	5,915	5,215
Russia	10,320	10,700
Sweden	455	390
Spain and Portugal.....	49,740	47,035
Turkey	1,400	950
Total Europe.....	94,020	90,620
Australasia	29,005	34,169
South Africa.....	5,230	7,775
Japan	31,360	34,850
Total	574,735	613,934

The development of the copper industry, as shown by figures, is really an indication of the development of machinery in general, that of the electrical industry in particular.

IMPORTANT ORIENTAL FERRY.

Shippers contemplating trade with Japan will be interested to know of a new ferry line of some considerable proportions which will soon be in operation between Japan and Corea. Two boats are being finished for the Sanyo Railway Company, and will ply between Fusan, Corea, and Shimonoseki, Japan, a distance of 120 miles, which it is expected will be covered in eight hours. The vessels, which are rapidly approaching completion, are 260 feet long, 36 feet beam, and 22 feet deep, with a draft, loaded, of 12 feet 6 inches. They are twin-screw steamers, with accommodations for 295 passengers of different classes.

The operation of these steamers will bring the entire Japanese railroad system in close connection with the Corean system, and through that with the Manchurian and Siberian roads. Then it will be possible for a traveler to make the journey from Tokyo to London by rail, with the exception of a boat trip of but 12 hours.

MEXICO'S NEW AMBASSADOR TO AMERICA.

In selecting Señor Joaquín D. Casasus to succeed the late Manuel D. Azpiroz as Mexico's ambassador to the United States, President Díaz has chosen a man who will do much to maintain and promote the present friendly relations existing between the two countries. The appointment came as a complete surprise to Señor Casasus, who had never sought it. He does not expect to assume his new duties before next October. In discussing the matter he said:

"I have not had the time since my appointment to determine which among the diplomatic questions that are likely to come up between the United States and Mexico will be the most important, but none can exceed in importance that of the commercial and friendly relations which already exist between the two countries. Mexico and the United States have many interests in common, and the ties which bind them will become closer with coming years. Their commercial and trade relations will increase with great strides each year. Mexico will in the future, as she has in the past, extend every protection to Americans and to American investments, and the two people will become closely allied. Trade between them has increased remarkably in the past fifteen years. At present, 80 per cent. of the imports into Mexico come from the United States."

Señor Casasus is a lawyer by profession, a master of the Latin, Greek and French languages, and has an excellent knowledge of English.

ENGLAND AND MEXICO—AN INCIDENT.

"The United States is right at the door of Mexico and it is reasonable that it should control the bulk of Mexico's trade. England is very willing that this should be the case." This statement was made by the British Consul-General to Mexico a short time ago, when his post was transferred from Mexico City to Vera Cruz and England's consulate at the capital of the Southern Republic was practically abandoned. The change of the Consul-General's headquarters has great significance, for it indicates that Great Britain no longer intends to compete actively with the United States for Mexico's trade.

The English Consul-General explained the reasons for this step as follows:

"The investment of additional British capital in Mexico will not be encouraged. England feels that the United States has a preferred claim to Mexico's trade and to the opportunities for industrial development in this Republic. No campaign will be made by British interests to wrest Mexican trade from the United States, and no efforts will be put forth by the British Consular service to encourage the investment of English capital in Mexico. England is interested in Argentina and Chile, but outside of those countries there is no Latin-American country that we care much about."

This action by England should not by any means be taken as an indication that it has given up all interest in Mexico. It still retains an extensive trade there, but has gracefully yielded first place to the American exporters. Relations of the friendliest nature have existed between Mexico and the United States since 1874. In that year this country sent products valued at \$5,946,839 to Mexico. In 1904, America's exports to that country were \$45,844,720, or about eight times as great as in 1874.

"Mexico is partial to the United States," said Señor Romero, the Mexican Consul in New York, in discussing England's action, "and likes the goods sent there by your country. Mexico also ships an enormous quantity of its products to the United States, which is taking advantage of a wonderful opportunity it now has in our country. The two republics will always be warm friends."

It is reasonable to infer that England's experience in Mexico will be repeated elsewhere in the not distant future. Mexico is practically the only country whose conditions have been carefully studied by American manufacturers, with the deliberate purpose of seeking its trade. When the United States makes similar intelligent efforts to secure the foreign commerce of other countries, it will be surprising if success does not crown the undertaking.

PROSPERITY IN CUBA.

The increase in exports from the United States to Cuba for a period of nine years has been over \$30,000,000. These figures emphasize the rapid development of the island since it became an independent government, a development largely due to the friendly relations existing between the new republic and its older sister, the United States.

Cuba's rapid progress, through its close trade relations with the United States, are interestingly illustrated by statistics recently prepared at Washington. During the period of ten months ending April, 1898, the imports from Cuba to the United States were \$13,760,366. In the ten months ending last April, they were \$69,441,259.

The marvelous upbuilding of Cuba has been accompanied by a steady increase in demand for American goods, as is shown by a comparison of American exports to the island during ten months ending April, 1904, and April, 1905. In the ten-month period of 1904, the exports were \$21,855,745, and in the same period of 1905 they amounted to \$31,319,520 an increase of 43.3 per cent.

In 1904 iron and steel manufactures valued at \$2,853,363 went from America to Cuba, and in 1905 the total for these products was \$5,061,396. Other exports show a corresponding increase as follows: Bituminous coal, 1904, \$1,122,523; 1905, \$2,280,479; cotton cloths, 1904, \$266,929; 1905, \$688,878; agricultural implements, 1904, \$84,663; 1905, \$152,811. Cuba appreciates the worth of American goods and herein lies the secret of its great development.

A Mexican Bureau of Information.—In reference to the proposition of the recently organized association in Mexico for the dissemination of information regarding industrial and other opportunities in that country, the *New York Commercial* makes the comment that, while the idea is a most commendable one, it could be much more effectively carried out by establishing the proposed bureau in New York, than in the city of Mexico. The information contemplated by the charter referred to is not required in Mexico but in the financial and industrial centers of the United States.

Our people cannot in any considerable numbers go to Mexico for facts, and not one of them in a thousand would ever know how to obtain them through correspondence with an organization or individual located in a foreign country.

IMPORTANT DISCOVERY IN PHOTOGRAPHY.

Among all of the investigations and discoveries that have recently been made relative to the phenomena of light in connection with photography, the experiments of Mr. J. Ellsworth Hare, a Chicago photographer, are showing some of the most promising practical results, says *Popular Mechanics*. While photographers all over the world have been attempting to discover methods of photographing in colors or of producing colored photographs by one process or another, this young man has actually succeeded in producing portraits in colors by a purely photographic process. These portraits bear a distinctively poster character in appearance, and, although the process has only been perfected within the past few weeks, the new-style colored photographs are already commanding high prices among the members of Chicago's four hundred.

The process of making the "poster portraits in colors," as the inventor calls them, is a printing process, the result being brought about by a double exposure to the light and a triple manipulation of the chemicals. The photograph is made on a thin metallic plate, very light in weight, which is prepared by a complicated system of coating before it is ready for printing.

The first coat is of a collodion nature, containing the double salts of silver. After this coating has been allowed to dry over night in a dark room, it is recoated with a heavy coat of specially prepared and sensitized bicromate solution, in which enough black carbon pigment has been added to make the solution perfectly opaque. The plate, when thoroughly dry, is ready for printing.

An ordinary portrait negative such as is used by all photographers is used to print from. Although the operation of placing the sensitized metallic plate in contact with the negative must be done in the dark room, the printing is done in the sunlight. The first exposure is determined by time.

After the first exposure has been made the plate is removed to the dark room, where it undergoes a process of washing in hot water. This removes the opaque substance, or outer coating, from the high light part of the photograph, leaving the high lights and half-tone portion of the underneath coating free to the action of light for the next exposure and the shadows remaining perfectly blank. The plate should then be thoroughly dried, when it is ready for the second exposure.

This exposure is made by artificial light, the time of which can only be determined by the printer's judgment. The plate is then ready for the toning bath, which is to produce the desired color. The different colors are produced by the use of a series of toning baths, the chemical combinations of which are a secret of the inventor. Thus a variety of shades from bright red to pink, and from pale green to deep yellow are obtained in the high lights and throughout the half tones. This leaves a striking photograph in two colors, the high lights standing out from the black with marvelous effect, which makes the person photographed appear to be seated in a dark room with a flood of strongly colored light of the selected tint falling upon him.

Photographs of even greater effectiveness than those already mentioned are obtained in three colors by the same process, with the exception that colored carbon pigment is used in the bicromate solution in place of the black employed in the

original process. This gives the shadow in one color, the high light in another, and the half-tones in a third color, which is produced by the presence of one color overlying another.

The metallic plate is used for two reasons. First, it acts as an opaque backing, which prevents the action of light on the inner or first coating from the back. Secondly, and most important of all, the plate, having a hard surface, prevents the coatings from sinking in, as is the case with photographs made on paper. This produces a photograph of a luminous quality. The latter effect constitutes one of the chief beauties of the new style of color photography and is a distinct innovation in the photographer's art.

The discoverer of the process explains his invention as an inspiration which came to him after dreaming over an idea and ruining scores of plates while experimenting during the past four years.

A NOVEL PORT BOAT.

The port of New York will have as part of its public equipment, at an early date, a craft mainly for hospital purposes, the counterpart of which does not exist anywhere. The boat is mainly designed for the work of transporting sufferers from contagious diseases to the hospitals at North Brother Island, and for this service the craft will have the most modern appliances that science can suggest; at the same time it will be fitted out with powerful pumps, and it is hoped that it will prove a great factor in the extinguishing of fires along the river fronts. It is also intended that the boat shall be used as a water-carrying craft, having a tank capacity sufficient to supply any of the public institutions located on the islands of the New York harbor in the event of an accident to the pipes affording the present source of supply.

The new boat will be known as the *Claudine*, and will be 126 feet long and 30 feet beam. The hospital section will be on the main deck and will consist of eight rooms, each liberally endowed with windows. These rooms are laid out in such a manner that it will be possible to reach any one of them without passing through any of the others, thus preventing the spread of contagion as well as avoiding the disturbance of patients. On the upper deck will be quarters for convalescents and visitors, nurses and doctors attending patients on the boat, patients being returned to the city as cured, and an office for the physician in charge. A morgue will be located in the bow of the boat on the main deck.

All of the rooms are of steel, and may be closed up as tightly as a steel box, to permit of being thoroughly disinfected when occasion requires. In the finishing of the interiors, all angles or shelves which might afford lodging places for dust and germs are eliminated.

The pumping facilities of the craft in case of fire will be considerable, but in addition to this there has been left a clear space on the deck large enough to accommodate a city fire-engine, and in case of an emergency such an apparatus may be loaded on board and transported to any part of the harbor.

The *Claudine* will be fitted with twin screws and will have a speed of fifteen knots an hour; the boat will be of light draught so that it will be possible to navigate in any part of the harbor. The new craft will represent an expenditure of \$70,000.

LANTERN SLIDES DISPENSED WITH.

The projecting lantern is used practically all over the world for the purpose of illustrating lectures and addresses, but its value has always been somewhat restricted by reason of the fact that it is necessary to make use of the medium of lantern slides, the making of which is a somewhat prolonged and tedious operation. To get the desired object on a slide, it is first necessary to make an ordinary negative by means of the camera. This negative is then placed in a special apparatus and the exposure made again on the regulation lantern slide. Thus it will be seen that all the various operations of photography must be gone through twice before the lantern slide has reached the finished condition. Many of our readers are acquainted with the making of a negative, and will appreciate the amount of labor and care which must be bestowed in the performance of the double task necessary before the finished lantern slide has been arrived at. Exposure, development, fixing and drying are all tedious processes, and each must be thoroughly and carefully done or the negative will suffer; and in the case of the lantern slide, as stated above, the process must be duplicated, one series of operations for each, the original negative and the slide which is made from it.

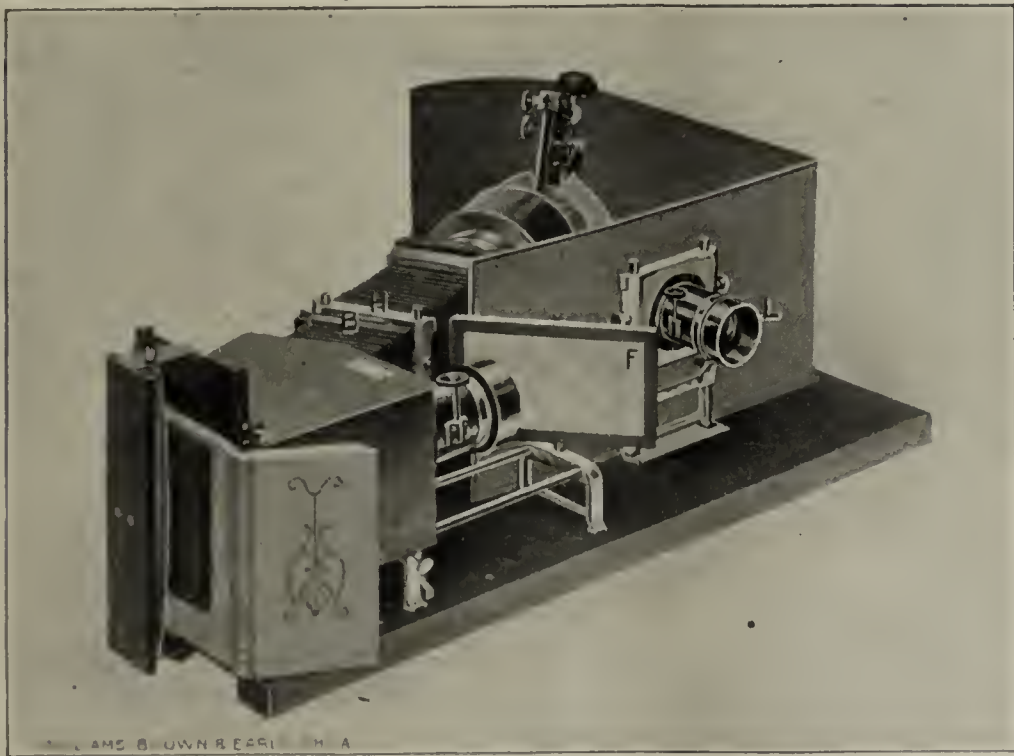
A very interesting and entirely new means of simplifying this matter has been recently devised by a firm of Philadelphia instrument makers. This method differs greatly, both in the application of the optical principles and in the results obtained. The new scheme dispenses entirely with the use of the slide and makes use of the original object where its size and shape permit of its use in this manner. When any small implement, object of art, manuscript, page of print, or similar article is exposed in the machine, its reflection is projected clearly and sharply on the screen in a manner very much superior to that secured by the use of the slide. It is superior because the ob-

ject is projected in its original colors, whereas, with the slide, it is shown in various shades of black and white.

This improved result is secured in a very novel manner,



NEW PROJECTING LANTERN IN OPERATION.



NEW PROJECTING LANTERN.

ject is projected in its original colors, whereas, with the slide, it is shown in various shades of black and white.

The advantages offered by this apparatus are very great, indeed. An illustration from a book can be shown without mutilating the volume in any way. Works of art or articles

as will be seen. The apparatus consists of two parts, one for concentrating the light on the object, and the other for conveying the reflected rays to the screen. The mechanism performing these two functions is compactly arranged so that the complete instrument is not unwieldy. A powerful light contained in the device is shielded by a metal screen, and the rays from this directed through a pair of condensing glasses of the ordinary type. The mounting of these condensers is also supplied with a diaphragm. The function of the latter is to regulate the amount of light, and thereby control the definition of the picture on the screen. The light rays then pass through a pair of illuminating lenses, and by their manipulation it is possible to further control the light on the object. With these it is possible either to throw an evenly diffused light over the entire object, or to concentrate it on some particular portion which may be under discussion. After the light has passed through these latter lenses, it strikes the object. The reflected rays of the latter are passed through an objective and thrown on a mirror which has the effect of correcting a reversal of the object which has taken place, and the picture is shown

on the screen in its natural position and color.

It is the expectation of the inventors of this lantern that it will work a revolution in the use of apparatus of this character, both at home and abroad, since the many difficulties connected with the manufacture of slides are eliminated.

REMOVAL OF A MARINE MENACE.

Foreign sea-captains and others engaged in trade with the United States will be interested in the destruction of a dangerous reef, known as Henderson's Point, which juts out from the Seavey's Island side of the Portsmouth Navy Yard, at Portsmouth, N. H., into the Piscataqua River. This point is at the narrowest part of the river, and is the cause of a sharp turn in the channel, which is responsible for a powerful current, with a maximum flow of five knots an hour. This place was well known to the dread of the naval officers and marine captains who had occasion to bring their boats to that part of the country.

The point represents a rock 300 feet long and in some parts as wide as 400 feet; to remove it to a depth of 35 feet below mean low tide in the face of the terrible current was an engineering feat of no mean proportions. The work was commenced three years ago, and has been pursued steadily ever since. Fifty tons of dynamite were laid, and the blast was made on the afternoon of July 22d, with great ceremony. It is estimated that 70,000 tons of rock were removed. The cost of the work was \$750,000.

A NOVELTY FOR THE DESK.

Various elaborate and expensive devices have been brought out from time to time for the purpose of perforating checks, as a means of preventing manipulation in the hands of unscrupulous persons. The newest thing in this line has the advantage of being the simplest. In the course of several months of development and perfection, it has been changed and simplified, until it has reached a stage where there are no superfluities of any character in its construction.

The little device is here shown, made up in the form of a combination desk convenience, combining the perforator with a knife for cutting paper and opening envelopes. It is quite small and, being nicely finished in nickel, makes a very attractive desk



PERFORATOR COMBINED WITH
PAPER CUTTER.

furnishing. While in this shape it will fill either of its functions satisfactorily, for more serious work a larger perforator is made without the cutter. This implement enables the desired perforation to be placed anywhere on a reasonably large piece of paper.

The company manufacturing this little device is about to put it on the market in still another form, which combines the features of the perforator and a desk calendar. In this shape it is anticipated that it will form a very desirable Christmas novelty. The calendar is made a perpetual one by merely slipping a new set of cards in each month.

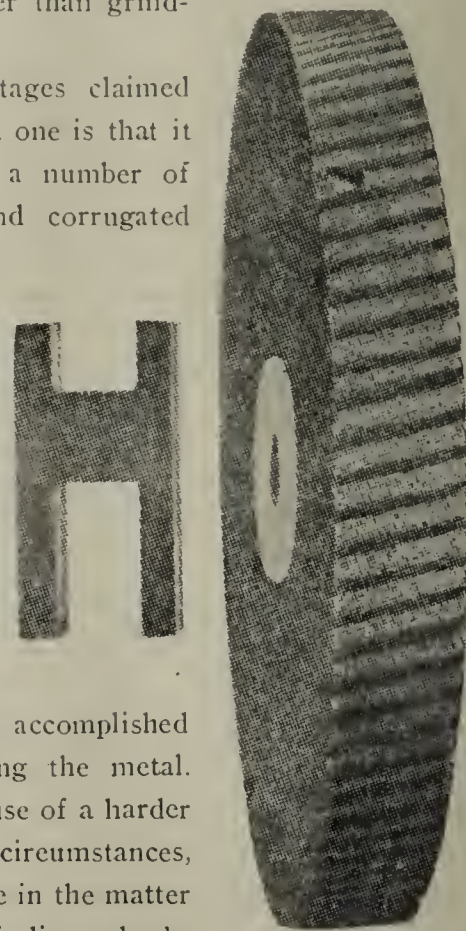
Change in Pacific Coast Steamship Rules.—After September 1st the Pacific Coast steamers will no longer call at Victoria en route from San Francisco to Seattle. New pilotage regulations compel such steamers to take a pilot when entering or leaving the harbor of San Francisco, which they have not done heretofore, and this would entail an additional annual expense of \$16,000 to the company.

The steamers at present come under the regulations applying to foreign-going steamers because of their call at Victoria. Vessels entering San Francisco from Seattle without calling at Victoria are, as coasters, not required to take pilots.

CORRUGATED GRINDING WHEELS.

An improvement which has been made recently in the manufacture of grinding wheels, is shown in the accompanying cut. It will be seen that there are slanting corrugations or teeth in the periphery of the wheel, thus making its action that of shearing, rather than grinding.

There are several advantages claimed for this wheel. The principal one is that it does more rapid work. In a number of tests made with smooth and corrugated wheels under identical conditions, it was demonstrated that a cut three inches deep was made in a gray iron plate three-quarters of an inch thick by the improved wheel in a half hour, while in the same time a wheel with a plain surface cut only an inch and a quarter.



This increased work is accomplished with less tendency to heating the metal. The corrugations permit the use of a harder wheel than under ordinary circumstances, which represents an advantage in the matter of saving in the bills for grinding wheels. As these corrugations are worn off, they are renewed by the use of a special machine made for the purpose. It is a hard tool which requires no fixture nor previous skill of manipulation; neither does it require the removal of the wheel.

NEW WAGON FOR HANDLING MEAT.

American meat shipments arriving in England, in common with those of other countries, have been open to the criticism that the goods were not always up to the required standard of excellence. Steamships had been fitted out with the most improved refrigerating systems and the functions of the apparatus seemed to be performed in a satisfactory manner, yet when the goods reached the consumer they had undergone a sad deterioration. The matter became so serious that it was made the subject of an investigation, whereupon it was found that the trouble reposed in the means of transportation from the vessel to the warehouse, and thence to the consumer. In this service, open wagons were used and the meat subjected to a sudden and disastrous change of temperature.

For the better protection of meat in the course of transportation, a special wagon has been devised which has an insulated covering. The cover is a light-structure about 6½ feet high, consisting of an outer and inner covering with a 3-inch space between them, this space being filled with sheet cork. All edges are lined with felt in order to more effectually keep out the atmosphere. Small trap-doors are provided, through which perishable goods may be introduced or withdrawn quickly.

The device has been given a practical test and has demonstrated its efficiency not only to the satisfaction of the meat dealers but also to the insurance agents, who had recently declined to insure this class of goods.

TIE-UP IN TURPENTINE SUPPLY.

The organization of the Naval Stores Export Company, which was mentioned in the May number of the *AMERICAN EXPORTER*, has caused a severe tie-up in the turpentine and rosin markets, and prices have reached a higher level than has been known in years. The output has been decreased so that the available supply is barely equal to the demand, and no prospects of relief are in sight. Southern turpentine operators, who control the American pine belt, have decided to restrict the output at least 10 per cent., and thus keep up the price. As a result the supplies at hand in Savannah, the leading Southern distributing center, in March amounted to only 2,771 casks, a decrease of more than 50 per cent. when compared with the available supplies for the same month last year. This restriction has naturally been reflected in the market prices.

Turpentine that a year ago brought only 40 to 45 cents a gallon now brings at wholesale 66 cents for machine barrels and 65 cents for oils. The difference is due to the cost of the barrels. To further add strength to the situation, holdings in the yards in Philadelphia have been reduced to a minimum. Unless the operators lift the embargo placed on the output, the arrival of the new crop, which is now about being harvested, will not aid very much in relieving the situation. It looks now, paint dealers say, as though the 1905-1906 crop will show a slight decrease when compared to last year's harvest.

The strength in the turpentine market is being reflected on rosin prices. Stocks have decreased more than 43,000 barrels in the last few months, and prices are at a level not reached before in many years.

EXPANSION CONGRESS IN BELGIUM.

At Mons, Belgium, on September 24th, a Congress will be held for the purpose of considering the economic expansion of the world. The Belgian Government has sent an official notification of the gathering to Washington with the statement that it is particularly anxious to have the United States represented at the discussions. The general subjects to be taken up during the meeting will include education, international statistics, navigation, civilization of new countries and means and mediums of expansion. Under the last-named heading a number of interesting commercial questions will be debated, among them the following:

- The creation and organization of import and export business.
- Is the creation of industries and new enterprises abroad advantageous or detrimental to the mother country?
- Subsidies to commercial missions.
- Inquiries in foreign countries—study of the markets.
- Should technical advisers be added to legations?
- Intelligence offices and commercial museums.
- Official museums of exportation, floating museums, permanent exhibitions.

The following are some of the questions that will be decided under the heading of International Statistics:

What are the best sources of information on the industrial and agricultural produce of a country, especially concerning raw material? What is the best basis on which to estimate the wealth of the principal productive countries? What are the methods adopted in different countries to obtain statistics of international commerce? Could a uniform method of classification be adopted in commercial statistics in order to render comparisons easier?

What method is to be applied in ascertaining the value of imported and exported goods? Is it preferable to fix the value according to the declarations of importers or exporters or according to prices established annually by a special commission? In international statistics what is the meaning of the words nationalized goods? Should imported and exported goods be classified according to the countries of origin and final destination or according to the countries from which they are shipped and those to which they are directly consigned? What is the best method of recording the efficiency of workmen conformably to race, social condition and organization of labor?

INCREASING DEMAND FOR AMERICAN COTTON.

Recent shipments of cotton from the United States show that England buys nearly as much of this product from America as the rest of the world combined. Great Britain's purchases of cotton from this country have almost doubled during the past year.

But while England has been using an enormous amount of cotton, the strides taken by Japan are phenomenal. In April, 1904, Japan purchased 2,450 bales from America, while during last April 38,932 bales were shipped from America to the Mikado's nation. In April, 1904, Great Britain received 185,615 bales from America; in April, 1905, she received 314,631 bales.

Germany purchased 62,759 bales in April, 1904, and 94,031 bales in the same month of 1905. Spain bought 8,118 bales from America in April, 1904, and 25,956 bales in April, 1905. Mexico received 510 bales in April, 1904, and 5,194 bales in April, 1905. France bought 9,625 bales in April, 1904, and 35,127 bales in April of this year. Purchases made by Russia in April, 1904, amounted to 9,572 bales, and in April, 1905, 4,468 bales.

The great increase in cotton shipments to Japan is evidently not due exclusively to the lower prices prevailing in the United States. It is due also to a much more active demand on the part of Japanese manufacturers, whose capacity for consuming raw cotton is growing.

Increased Shipping Facilities for Philadelphia.—It has been announced that the North German Lloyd Company is about to establish a new line running between Philadelphia and Bremen. The Delaware River terminal, at Jackson street, will be used for this purpose since excellent facilities are there afforded for the handling of goods of all kinds. The Baltimore and Ohio Railroad, which covers the southern and western part of the country, is expected to be the means of bringing considerable freight to this point for shipment abroad. At the start, it is proposed to proceed in a modest manner, and a vessel will be run each way once every three weeks. In the beginning, only steerage passengers will be carried, but, as the trade develops, it is hoped to make a bid for the cabin passenger traffic.

There are at present lines maintained between Bremen and the ports of New York and Baltimore, but this is the first connection between Philadelphia and any of the German ports.

Japanese Steamship Line to Resume.—It is announced that with the beginning of the coming year the steamship service of the Toyo Kisen Kaisha Company between San Francisco and Japan will be resumed by the operation of three boats; soon after the service will be increased by the addition of three very large, fine boats which are now being built. The business of the company was interrupted at the outbreak of the war by the government's action in requisitioning four of the company's vessels.

THE STRUGGLE FOR NAVAL SUPREMACY.

A struggle for naval supremacy such as has never before been witnessed in the world's history is being engaged in to-day. President Roosevelt has frequently declared that the United States needs a greater array of warships. The French Minister for Marine, speaking in the Chamber of Deputies, has urged an expenditure of more than \$24,000,000 annually until 1917 in building up France's navy. England and Germany are constantly adding strength to their already formidable fighting fleets, while Prince Pu Lung is the head of a committee appointed to formulate plans for creating a new Chinese navy.

Does this general movement indicate that the world is on the eve of a terrible clash? The real meaning is held to be just the reverse. A first-class navy, as President Roosevelt argues, is the surest promoter of continued peace and the best guarantee of commercial supremacy.

The recent battle in the Sea of Japan has caused a general readjustment in the estimates of strength of the world's navies. Statistics prepared by Capt. Seaton Schroeder, Chief of the United States Naval Intelligence Bureau, show that since the battle Russia has dropped from third to seventh place in naval power, while Japan has risen from seventh to sixth place. The United States advances from fifth to fourth place. Great Britain and Austria are the only Powers whose rank has not been affected by Admiral Togo's victory.

Germany Adopting Clearing-House System.—"The gradual adoption of the Clearing-House system by German bankers," says United States Consul Harris, of Mannheim, Germany, in a report to the Department of Commerce and Labor, "marks an advance in a branch of business long noted for its conservatism. Though the clearing-house method has been in use in London since 1775, and in the United States for more than half a century, its introduction into Germany is but recent. Twelve German cities now have clearing-house associations, against almost or quite 100 such associations in the United States. Other German cities, including Mannheim, are planning to form similar organizations. In view of the fact that personal checks are scarcely known in Germany in ordinary daily business transactions, the need of clearing houses has been less felt than under the American or English system. How far the use of checks in payment of private debts and in other daily transactions will become popular under the stimulus of a clearing-house system remains to be seen."

Germany Prefers American Locomotives.—Germany is beginning to show a preference for the American style of locomotive. Consul-General William F. Wright, of Munich, tells of this partiality in a recent report to the Department of Commerce and Labor. A short time ago, he states, several new locomotives of the American "Atlantic" type were put in service on the fast express line between Cologne, Berlin and Aix-la-Chapelle. The boilers are considerably larger than in the usual German engine, and, in consequence, the smokestack is very low, being of the same height as the dome. The diameter of the driving-wheels has been considerably increased, and they are driven by four cylinders. There are two distinct furnaces, fitted with smoke-consuming apparatus, which seems to produce good results. These locomotives have attracted attention because of their massive appearance, and they have proved to be more powerful and speedy than the ordinary German engines.

AMERICA'S FOREIGN BUSINESS.

The foreign commerce of the United States for the fiscal year ending June 30th, reached in value \$2,635,970,333, which exceeds that of any similar period. An analysis of the foreign commerce as prepared by the Bureau of Statistics, shows that both imports and exports made new high records, imports having exceeded by \$92,000,000 the total recorded in 1903, and exports having for the first time surpassed the figures of 1901. In 1903 imports first passed the billion-dollar limit, with a total of \$1,025,719,237; in 1904 they again fell below \$1,000,000,000 in value, being \$991,087,371, and for the year just ended are \$1,117,507,500. Exports first rose above \$1,000,000,000 in value during the fiscal year 1892, but fell below that limit in the following year, and so remained until 1897, when the total was \$1,050,993,556. In 1898 the total exports were \$1,231,482,330; in 1900, \$1,394,483,082; in 1901, \$1,487,764,991, a total which was not again equaled until 1905, when the figures stood at \$1,518,462,833, not only surpassing the record made in 1901, but for the first time in the history of our commerce passing the one-and-a-half billion-dollar limit.

The articles showing the greatest increase in exportations during the eleven months of 1905, for which details are available are: Corn, which shows an increase of \$16,000,000, as compared with the corresponding period of 1904; copper manufactures, an increase of about \$25,000,000; cotton manufactures, an increase of \$22,000,000; raw cotton, an increase of \$9,000,000, and iron and steel manufactures, an increase of \$23,000,000. China took a great deal of the copper, making use of it for coinage purposes, and also drew heavily on our cotton cloths, which sent up the figures for cotton manufactures.

New Cuban Electrical System.—The Havana Central Railway Company has awarded contracts for the construction and equipment of a great electric railway system covering the interior of the island of Cuba, which has hitherto been without facilities of this kind. American companies have contracts for the installation of a power house with a 7,500 horse-power equipment to be established at Havana, the generators being driven by steam turbines. At the outstart three lines will be operated. One will extend across the country to Rosario, a distance of about forty miles; a second will be laid south from Havana to Bejucal, a distance of seventeen miles; and the third line will run southwest to Mariel, a distance of about thirty-seven miles, with branch lines to El Carmelo, Santiago de las Vegas and Tuirá de Melena.

These operations make a total of about 125 miles, which will cost \$5,000,000. The contract for the electrical equipment has been awarded to the General Electric Company, and it is valued at more than \$1,500,000. The United States Steel Products Export Company has been given the contract for rails, which calls for 15,000 tons of standard sizes.

One Month's Shipments from New York.—For the four weeks ending July 28th, the value of the exports (exclusive of specie) from the port of New York amounted to \$38,219,879. Those to Great Britain footed up at \$9,404,313, exclusive of shipments to the British possessions, which amounted to \$4,724,185. The other notable items are: Germany, \$3,435,995; Argentine Republic, \$1,557,424; Cuba, \$1,555,262; France, \$2,572,564; China, \$961,833; Philippines, \$277,113, and Panama, \$389,384.

AMERICAN AUTOMOBILES FOR CROWNED HEADS.

It is certainly a tribute to American workmanship that the crowned heads of Europe should look to this country for supplies of any character. One electric automobile manufacturing company recently received orders for two vehicles destined for royal use, which we are able to reproduce herewith. As these cars are designed for private and not state use, there is little or nothing in their appearance to distinguish them from vehicles which are to be seen every day on the streets and roads of this country.



AMERICAN ELECTRIC SURREY FOR KING ALPHONSO, OF SPAIN.

The first, an electric surrey, was ordered for King Alphonso, of Spain. The vehicle is of exceedingly neat appearance and has all the mechanical and electrical improvements which have recently been made. The two motors are connected inde-

pendently to the driving wheels by internal gearing. The wheels are thirty-two inches in diameter, those in front being equipped with three-inch pneumatic tires, and the rear wheels with solid tires of the same size. The battery of forty cells is carried in a compartment in the rear of the body. This was supplied by the Electric Vehicle Company, and the same company also furnished a runabout for Crown Prince Constantine, of Greece. This is a single-seated car with a maximum speed of fifteen miles an hour with two speeds forward and two backward. It has a double-acting brake with a foot-lever which can bring the car to a very quick stop. The same company recently shipped a car to Mme. Sarah Bernhardt, which was forwarded to one of her French residences.



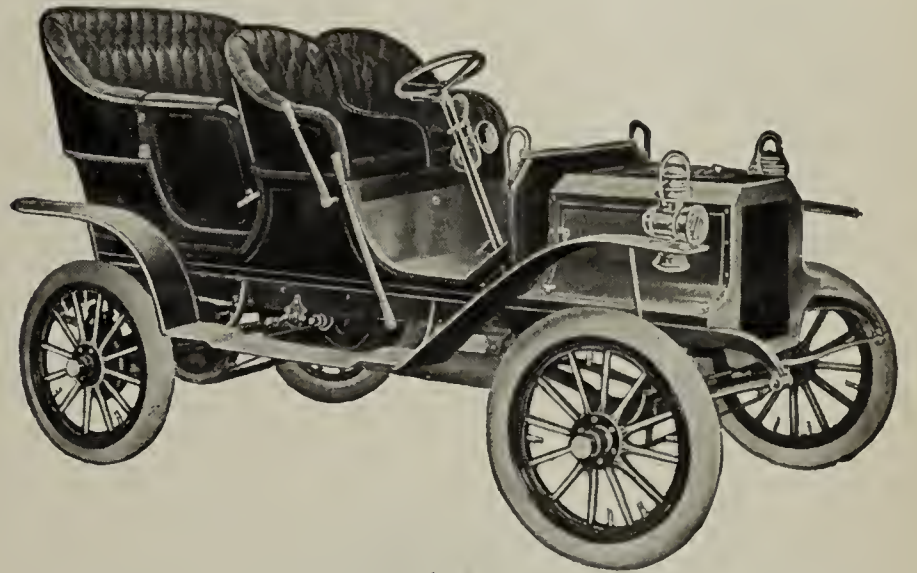
AMERICAN RUNABOUT FOR CROWN PRINCE CONSTANTINE, OF GREECE.

An interesting event in the automobile world took place in the early part of last month when the White car, guided by Webb Jay, broke the record by covering a mile in $48\frac{3}{5}$ seconds at Morris Park. A picture of the White racing car, with Webb Jay handling it, is here reproduced.



WINNING WHITE MACHINE, OPERATED BY WEBB JAY.

Motorists all over the world have been watching with interest the reports of the Glidden tour up Mount Washington, because of the practical motoring points which would be brought out by it. The promoters of the Reo car have been particularly pleased with the behavior of their machine, because of their uniform and consistent character, and operating economy. In the second day's journey, a car of this type, operated by Mr. R. E. Olds, its inventor and builder, made the run from Hartford to



REO CAR USED IN THE GLIDDEN TOUR.

Boston, 122 miles, carrying five passengers, at a cost of \$2.15, or about 43 cents per passenger.

These figures, based on the outside prices of gasoline and lubricants, when compared with the regular railroad fare of \$2.75 per passenger, are calculated to open the eyes of the people who think that automobiling is an expensive pleasure.

Automobile enthusiasts regard the results of the Glidden touring as a splendid demonstration of the excellence and reliability of the American machine. Twenty-six of the thirty-two starters finished in good condition, after an 870-mile trip over all kinds of roadways, from the most magnificent macadam boulevards to difficult mountain roads. From every point of view it was the most successful test of the kind ever held in this country. The cars generally made a better showing mechanically than ever before, and showed greater endurance and reliability than in any previous contest.

The award of the cup will be made at a meeting of the committee during the early part of the present month; before the results can be arrived at and the cars given their proper rating, there is a great deal of work to be done in the way of calculating or averaging the points scored each day by the different contestants.

THE STORY OF A LEATHER BELT.

Following a leather belt through its many processes in a model American factory, and contemplating the care and diligence which is exercised in the selection of the material which



A GLIMPSE OF THE STOCK-ROOM.

enters into its construction, one is apt to come to the conclusion that the manufacturer is as fastidious as is the fashionable lady in choosing the fabric for her gown. One would think at first

glance that any portion of a tanned hide would answer the purposes of a belt, but the facts are directly to the contrary. In the slaughter houses of the Far West the belt maker commences his inspection of the leather, preferring the product of those establishments which are supplied with cattle from the wildest regions, for it is from these quarters that the most perfect hides are secured. One of the outposts of civilization is the barb-wire fence, and where these exist the hides are very apt to be imperfect. The hide of an animal coming into contact with one of these barbs is damaged forever. Time will heal the wound in the flesh, but there remains forever a weak place in the skin which seriously affects the value of the hide in the eyes of the leather dealer.

All skins of this character are rejected by the leather belt tanner, who is extremely particular, and a constant watch is made

man takes it and cuts out a piece which represents less than half of the whole, which he makes use of for belt-making; the remainder is waste, as far as his business is concerned.

Messrs. Charles A. Schieren & Co., of New York, who own one of the largest leather belting tanneries in the United States, as well as one of the most complete factories, explained the various processes to a member of the AMERICAN EXPORTER's staff. Since leather belts are exported from the United States in large numbers, a description of the American method of manufacture made use of here will, no doubt, be of interest to our readers.

The product of this particular tannery, which amounts to two thousand hides a week, is shipped to the factory and piled up in the big stock-room, which is reproduced herewith. Here is a constant supply from which draught is being made all the time. The "butts" piled here have already been once trimmed, the rough edges of the belly having been cut away. After being carried to the workshop on the sixth floor of this factory, the hide is critically examined by a workman, who then marks out a square from the choicest part of the hide. It is then



PREPARING THE ENDS FOR GLUING.

passed through a cutter, the blade following the lines which were carefully ruled off by the first workman. This selected piece represents in quantity about forty per cent. of the entire hide, and in value a little more than half.

In the utilization of the hide, it is further divided into five other parts, the neck, shoulder, tail and two flanks. The heart of the hide, or the selected piece, is then cut up into the desired widths by a cutter in the shape of a revolving knife. This rotary tool can be instantly adjusted to make cuts of any width. The leather strip is then taken up by another workman, presiding over a machine which prepares the ends of the hides for the operation of gluing. This consists of shaving away a section of the edge for a distance of three or four inches, so that when the trimmed edges of two strips are placed together, one overlapping the other, a perfectly smooth joint is made without the least irregularity in the surface being apparent. This joint, however, is not yet fine enough for the fastidious American belt maker, for the laps must go through the hands of a workman who does what is technically known as feathering the edge. With a knife which would discount most razors for keenness, these edges are shaved down to a fine point. The small widths of belting are treated with a long knife, while the wider strips are cut away with a tool somewhat resembling a long-bladed spoke-shave, but which is known as a "slicker."

These strips, with their laps properly feathered, are then taken



A HIDE READY FOR THE CUTTER.
(Only the square marked "Electric" is used for belts.)

through all the early stages of the tanning process for the development of such weak spots in any of the skins. After the hide has passed through all the tanning processes, the belt

to the hydraulic presses; after a critical examination by the operator, the edges are covered with glue from an electrically heated glue-pot and the two ends are adjusted with exquisite care, one overlapping the other, and placed in the press, where they are subjected to a pressure of thirty-five hundred pounds to the square inch. The joint remains here while the next is being prepared; the latter operation being completed, the belt is moved along to the next joint. After this treatment the belt is said to be just as strong at the joint as at any other place. Repeated tests made in a Fairbanks machine have demonstrated that the section of belting is just as liable to break at any other point as at the joint.

All of the foregoing processes are conducted on the sixth floor of the new factory mentioned above, and the belt in its rough shape is then sent to the finishing department on a lower floor. Here the long strips of leather are put through a machine which trims the edges and then rolls the leather up in lengths of two and three hundred feet each. This same machine puts the stamp of the firm on the surface of the belting at regular intervals, as well as the indication of the number of feet, the latter impression being made at intervals of one foot. The parcel is given a scouring to improve its appearance and then is ready for the shipping room.

The new Schieren factory is a ten-story fire-proof building



APPLYING HYDRAULIC PRESSURE TO THE JOINTS.

of steel, fire-brick and cement, occupying a lot 124 by 84 feet, and in its design many of the most recent ideas in factory and building construction have been adopted. Motor-drive is made use of throughout, and in accordance with the most approved practice several machines have been grouped around each motor. This arrangement is said to be much more economical than the individual drive; in grouping, such machines as are in constant use are placed together, while those made use of at less frequent intervals are likewise assembled around another motor. In this manner it is claimed that the most economical use is made of the current. The building is equipped with three freight elevators, traveling 150 feet a minute, and one passenger elevator moving at the rate of 250 feet a minute. They are all electrically operated. The building is equipped with a telephone system connecting all departments; in addition to this there is a Lamson pneumatic installation for the conveyance of orders and messages, which must be in writing. The power equipment consists of two General Electric generators of 110 horse-power each, driven by a Watertown engine.

The capacity of the establishment provides for the manufac-

ture of belting of any width up to eighty-four inches, which is the capacity of the largest hydraulic press in the place. The widest belt ever turned out was seventy-eight inches in width, a three-ply article now engaged in transmitting 2,000 horse-power.



TRIMMING AN UNUSUALLY WIDE BELT.

shows packages marked for shipment to the Orient, South America and many other distant points.

It will be remembered that belts were copper-riveted up to the time of the general introduction of electric lights, but at the high speeds common with the generating machinery this was found to be unsatisfactory, as there was always a slip at the point where the rivets passed over the wheels. In order to overcome this difficulty the cemented belting was devised; the art of manufacturing it has been so perfected in America that the joint made in this manner is superior in many other respects to that of the riveting process.

The Dixie tannery of this firm, to which reference has already been made, is located at Bristol, Tenn., in the very heart of the Holston Mountains, where vast forests of rock-oak sup-

ply the bark for the tanning operation.

The bark of this tree is said to be that best suited for the tanning of leather for belting purposes. A little over ten years ago the capacity of this plant was 50,000 hides per year; to-day it is exactly double that number and is operated to its fullest extent at all times,

to keep pace with the increasing de-



A CORNER OF THE SHIPPING-ROOM.

mand, domestic and foreign, for the American-made leather belt. These belts are now famous for their sterling qualities the world over.

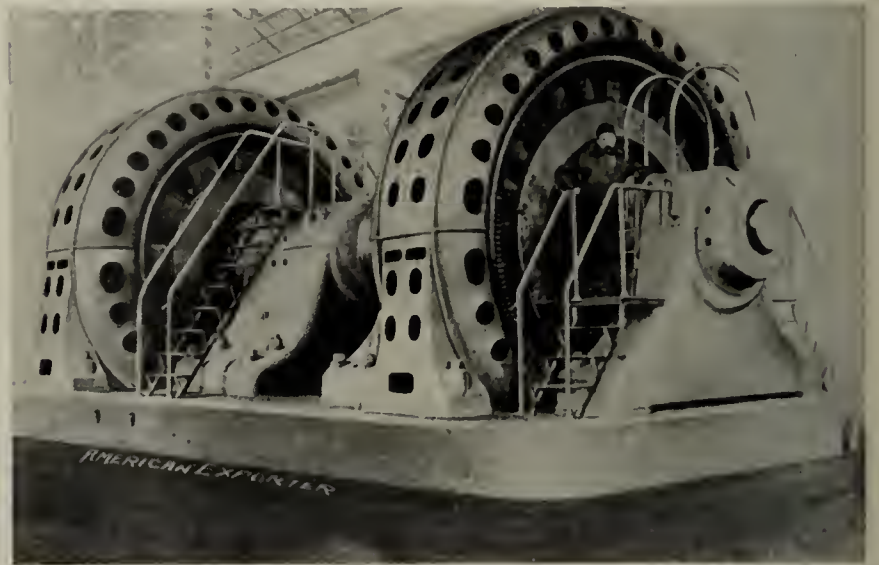
THE LARGEST WATER TURBINE AND ELECTRIC MOTOR.

The largest water turbine in the world as well as the most powerful electric motor which has ever been built are the products of manufacturers in the United States, and have been installed in the power plant at Shawinigan Falls, located on the St. Maurice River, about eighty-four miles northeast of Montreal, Canada. Views of both these machines are presented herewith. That of the turbine is particularly interesting for the reason that its gigantic proportions are brought out by the introduction into the picture of human figures, which serve the purpose of making comparison of proportions.

This turbine has a capacity of 10,500 horse-power, is 30 feet high, and 22 feet wide over all. The distance between the centers of the two shaft bearings is 27 feet; the shaft is of solid forged steel and weighs ten tons, while the weight of the entire apparatus is 364,000 pounds. The shaft alone is slightly over 32 feet long and 22 inches in diameter at the center, tapering toward the ends. The wheel of the turbine is of bronze and weighs five tons. It was built in the remarkably short time of five months by the I. P. Morris Company, of Philadelphia. This is the fourth turbine which has been installed at this plant, but the others are of smaller dimensions. This gigantic piece of mechanism was made necessary by the exceedingly rapid demand for power at

handled by a stream 100 feet wide 9 feet deep and flowing at the rate of 60 feet per minute.

The turbine is of the horizontal in-flow type, with spiral casing and draft tube on each side, through which the water dis-



LARGEST ELECTRIC MOTOR EVER BUILT.

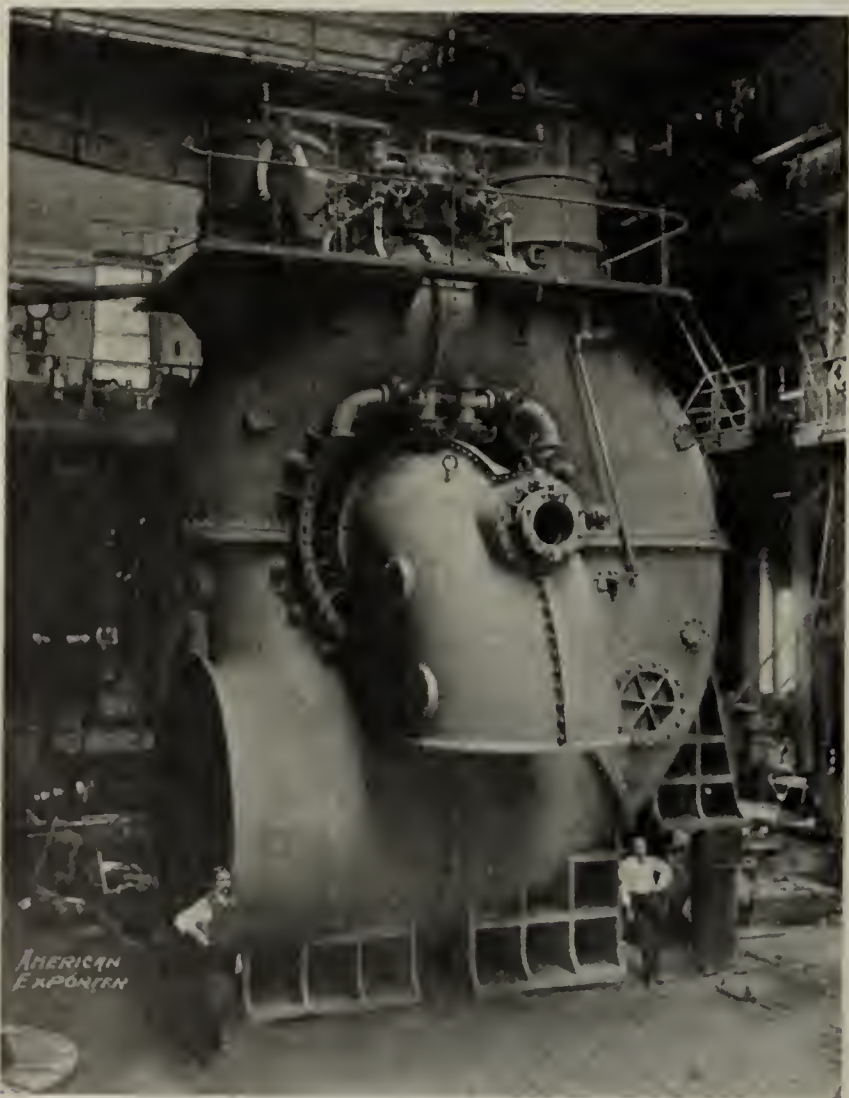
charges outward from the center. The water enters the turbine through the intake, 10 feet in diameter, at the bottom of the turbine. It flows around and fills the outer special tube and then passes in radially through an annular gate and then through the wheel, finally discharging to the right and left through two large draft bends on either side. In these bends are situated the bearings for the shaft.

The largest electric motor in the world, a view of which is also shown herewith, was built by the Allis-Chalmers Company, at the company's electrical works in Cincinnati, O. It embodies in its design the characteristics of the Bullock alternators, which have proven singularly successful in their operation. The motor is of 8,000 horse-power. The rating of the generator operated by this motor on standard specifications, is 5,750 kilowatts at 300 revolutions per minute. The combined machines are remarkable, in addition to their enormous capacity, for concentrating in a remarkably small floor space a volume of 12,000 kilowatts.

The working of the generator and motor forming the frequency changer at Shawinigan Falls will be carefully noted by electrical engineers in all parts of the world; if it proves in practice as successful as the builders anticipate, the result will be a valuable addition to the existing data on the subject of alternating current machinery.

The location of the Shawinigan plant is a most inviting one for the purpose. The total fall of the water is 140 feet between two large expanses of water which might be called lakes. These are connected by a short stream which makes a very sharp bend and in this manner the two larger bodies of water are brought in very close relationship to each other. A canal 1,000 feet long and 20 feet deep diverts the water of the upper lake and carries it to a point where there is a slope of 140 feet in 500, and here the end of the canal is sealed with a cement wall; the escape of the water is through six outlets for as many penstocks, each 9 feet in diameter. The power house is on the shore of the lower lake. Until the last addition of the large installation noted above, three turbines with a capacity of 6,000 horse-power each were in use, these being each directly connected to a 3,750-kilowatt generator.

A large part of the power from the Shawinigan plant is transmitted to Montreal, where it is made use of by a street-car company. The remainder is used by local consumers.



LARGEST WATER TURBINE IN THE WORLD.

this point. The site of the plant was a wilderness five years ago, but to-day it is a busy city of five thousand persons.

It is no exaggeration to say that this turbine takes care of a river, for the water which flows through it is equal in volume to many important streams of this country. When operating at a full load, no less than 400,000 gallons of water pass through this machine per minute, and this represents the amount of water

THE NEWEST NUMBERING MACHINE.

What is said to be the only improvement in numbering machines made in thirteen years, is shown in the accompanying cut. The device is the product of the Bates Machine Company, of 346 Broadway, New York. The model has just been put on the market. Instead of the customary iron or brass frames and brass cases, all metal parts are made of steel, contributing strength and rigidity with medium weight. While they are not likely to

become broken or damaged, they are produced on the American system of interchangeability, so that if the device should be put out of use for any reason it is a very simple matter to replace the defective part.

The mechanism is protected by an enclosing case with a window, and the adjustment is secured by moving a small knob until the word appears back of the window indicating the kind of numbering desired. When set at "Consecutive" the number advances with each impression up to 999,999. Set for "Duplicate," each number is printed twice. The third adjustment repeats indefinitely. As far as results are concerned, this does not materially vary from other machines of the same character, but the bold presence of the word for which it is set is a great convenience and a safeguard for the operator.

As to the construction of the Bates numbering machine, the "drop-ciphers" with their springs and pins have been eliminated, and the wheels themselves are made depressable to provide for the necessary spaces preceding the unit wheel. The plunger is made of Bessemer steel and has a shield which makes the operation of the machine cleanly and prevents the hands of the operator from becoming contaminated with the oil. The frame is very substantial, being made of drawn steel one-quarter of an inch thick, finished in blue.



123456

FAC SIMILE IMPRESSION

A FLOATING EXPOSITION.

The Export Shipping Company, of New York, is planning to send a floating exposition around the world for the purpose of cultivating foreign trade by bringing American goods to the personal attention of merchants abroad. It is expected to have everything in readiness to permit boat's sailing in January next. The vessel will be large and first-class in every particular. Extensive alterations are contemplated to adapt it to the purpose of displaying goods to the best advantage, and for the accommodation of representatives of different exhibitors who may desire to have their own men aboard.

The trip will embrace the continents of Europe, Asia, Australia and South America, and parts of Central America and the West Indies. The boat will visit forty-six different countries and touch at seventy-five ports. The trip will consume about fifteen months.

The Mariners' Guide.—The second edition of "The Navigator or Mariners' Guide," has just been published by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., who has spared no expense to make this edition, like the first, one of the best reference books ever published for navigators, yachtsmen and students of navigation. With the volume are furnished charts of New York Bay and harbor, Long Island Sound, Boston and Gloucester harbors, Delaware and Chesapeake bays, Portland, Me., Block Island to Currituck, and a current-course projector. The book will be sent to any one desiring a copy for 25 cents, which about covers the postage.

A NEW WET TOOL GRINDER.

A 20-inch Water Tool Grinder, designed for wheels 20 inches by 2½ inches with 9-inch hole, has just been placed on the market by the J. G. Blount Company, of Everett, Mass.

This machine has long, self-oiling bearings, is of heavy construction to avoid vibration and provided with a large, deep pan which conducts all surplus water back to the tank in the column; the water is applied to the wheel by means of a vertical, centrifugal pump which insures a constant supply, which may be regulated by means of the valve at the left. The vertical pump shaft is driven by means of a friction which is held in contact with the edge of the main drive pulley and runs in self-oiling bearings which are above the water-line and are thereby protected from all gritty substances that may be in the water. These bearings are mounted upon a forked carrier pivoted at its lower end; the upper end being secured between jaws which are provided with a spring to force the friction against the driving pulley. The pump

case is of snail-shell design and the pump is so loosely fitted that it does not touch the case at any point; coarse sand can pass through it without injury. It is set low and provided with a large passage for the water to flow through from the tank in the column. A sleeve cap covers the pump case and prevents leakage without the use of packing, the water-line always being below the top of the sleeve. A pan is set below the wheel and extends from the front to the back of the column



BLOUNT WATER TOOL GRINDER.

to catch and prevent the dirt or grit from settling in the tank. The water from this pan passes to the tank below at the farthest point from the pump and the tank is provided with a settling chamber to catch and retain any grit that may have passed the pan. The tank has a large opening at the right side through which it may be cleaned when necessary. The hood which covers the wheel is brought well forward from the center to prevent water reaching the main bearings or flying upon the floor.

This new design will doubtless meet with ready acceptance on the part of foreign buyers. It is manufactured by the J. G. Blount Company, Everett, Mass.

A Primer of Forestry—(Gov't Printing Office, Washington, D. C.)—By Gifford Pinchot. This is one of the helpful publications now being sent out by the Department of Agriculture. Part I appeared in 1903, and repeated editions have been called for. Part II has but recently come to hand. The author has compressed into the compass of this modest "Primer" a surprising amount of practical, expert knowledge, and has illustrated the text profusely with well-chosen illustrations. The practical lumberman, the man perplexed with the problem of replacing a rapidly vanishing forest, he who merely seeks to rear beautiful shade trees, and many others with kindred objects in view, will thank Mr. Pinchot for his excellent handbooks. Part I deals with the forest as a whole; Part II with actual work in the woods. Each is furnished at the nominal price of 35 cents.

These publications should prove of decided value to lumbermen in many parts of the world. The information contained is not limited to the forestry of the United States.

NEWS OF THE EXPORT TRADE.

Brazilian Shipment.—The Harlan & Hollingsworth Company, of Wilmington, Del., will soon ship several boilers to Brazil.

Telephone System for Manila.—It is stated that an official of the American Bell Telephone Company is at work planning a system for use in Manila.

Canadian Milling Contract.—The MacDonald Engineering Company, of Chicago, Ill., has secured a contract for a fireproof milling and elevator plant for the Keewatin Flour Mills Company, at Ottawa, Can.

Large Canadian Contract.—The Algoma Steel Rail Mill, operated largely by American interests, at the Canadian Sault, is now at work on a \$25,000 contract for the Canadian Pacific Company, which is taxing the capacity of the mill to its utmost.

Wrecking Crane for Belgium.—It is a testimonial of no mean proportion in favor of American railroad machinery that the Belgian State Railway has ordered a large wrecking crane from this country. The total weight of the crane is seventy-six tons.

Copper Furnace for Mexico.—The Allis-Chalmers Company has been given an order for a 200-ton copper furnace for the American-Mexican Mining and Development Company, at San Lorenzo. The company will soon construct a tramway to connect its mines with the smelting plant.

Steel Consolidation Reported.—There have recently been repeated rumors in the iron and steel circles of the United States to the effect that the United States Steel Corporation will soon absorb the Dominion Iron and Steel Company, of Canada. It is said that the value of the Dominion property is placed at \$20,000,000.

Cars for Portugal.—An order for a number of cars of the semi-convertible type has been received by the J. G. Brill Company, of Philadelphia, for the Carrio de Ferro, of Lisbon. A notable feature of these vehicles is that the transformation from a closed car to an open one, or vice versa, is performed in the single gyration of a lever.

World's Steel-Producing Record.—During the month of May the world's record was broken at the Homestead plant of the Carnegie Steel Company by turning out 205,000 tons of steel. This is the greatest output ever recorded in any mill in the world, and exceeds the next best record (which was made at the same plant a few months before) by 5,000 tons.

Hungarians Like American Machinery.—American cotton goods machinery is becoming popular in Hungary. Frank D. Chester, the United States Consul-General at Budapest, writes that a large firm in that city is about to equip its cotton goods printing factory with machinery from this country. Other firms, appreciating the value of American machinery, are expected to take similar action within a few months.

The Japanese Loan.—The subscription lists for the Japanese loan were closed on July 12th by Kuhn, Loeb & Company and the National City Bank, of New York City. How largely the loan has been oversubscribed cannot be told for some time. It has been stated, however, that the greater portion of the bonds would go to small investors and that the bids of the large financial interests would be scaled down considerably.

Effect of the War on Corea.—Dr. Horace Newton Allen, retiring Envoy Extraordinary and Minister Plenipotentiary from the United States to Corea, arrived at Seattle recently, on his way to Washington to surrender his portfolio, which he has held for

many years. As to the influence of the war on the trade of Corea, Dr. Allen says that it has not suffered in the least. As a matter of fact, he thinks that in the aggregate it has increased.

Large Electrical Contract for Mexico.—A \$10,000 contract for electrical equipment, representing 3,600 horse-power, has been awarded to the Westinghouse Electrical Manufacturing Company by the Dos Estrellas Mining Company of the El Oro district, of Mexico. The current generated will be used in lighting and operating a mill of 250 stamps. This is the second large contract which has been filled by the Westinghouse Company in this district.

Cheap American Furniture.—According to Consul-General Richard Guenther, of Frankfort, Germany, the preponderating exports from the United States to South Africa are causing considerable alarm among German manufacturers. A leading trade journal of Germany calls the attention of manufacturers to this increase, and dwells particularly on the advantage that is being gained in the exports of American furniture. This is attributed to the practical mode of packing, whereby the cost of transportation is much reduced and the furniture can therefore be sold cheaper.

American Trolley Plant for Lima.—United States Consul A. L. M. Gottschalk, at Callao, Peru, reports that the Empresa del Tranvia Urbano de Lima (Lima Horse-Car Company) will receive proposals from the United States for the material which it intends to purchase in order to transform its present line into an electric trolley road. The company will need forty-five cars, with a seating capacity of forty persons each. Señor D. Joaquin Godoy, who has charge of the plans for reconstructing the road, will have no difficulty in finding just what he wants in the United States. Undoubtedly he has learned, after investigation, that America is the world's best and cheapest market, else he would not have confined the bids to this country.

Important Japanese Business.—The extent of the orders for steam and gas engines from Japan filled by the Westinghouse Machine Company, of East Pittsburg, Pa., not only speaks well for the products of that company, but also show that the Japanese are as thoroughly informed along industrial lines as they have shown themselves to be in the science of war. During the years 1903 and 1904, Takata & Company, agents for the Westinghouse Machine Company, in Japan, have sold no less than 56 Westinghouse engines, ranging from 600 horse-power down to 12½ horse-power, and aggregating in capacity almost 8,000 horse-power. They are all of the vertical single-acting type, both simple and compound. The list of customers comprises government arsenals, railroads, electric light companies, bureaus, water-works, mines, universities and hospitals.

Premium on American Shoes.—Attention is called, in a report from United States Consul A. Le Roy, of Durango, Mexico, to the fact that Mexicans desiring to purchase shoes made in the United States are compelled to pay a premium on them. This sometimes makes the shoes cost double the American price, although the duty averages no more than 50 cents, gold, per pair. This fact has been brought to the attention of American manufacturers and they are undertaking to correct the evil by stamping the right price on the soles of the shoes for the guidance of the purchaser.

One of the results of this extortion has been the development of a large mail-order business with the manufacturers of the United States. In the city where the consul is stationed, he notes that an order for no less than forty pairs of shoes was sent off recently to be filled by a New England factory. The shoes were for young German and American clerks employed in the city.



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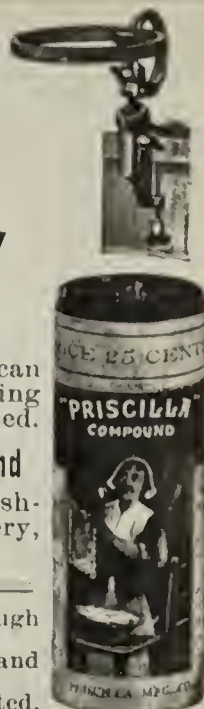
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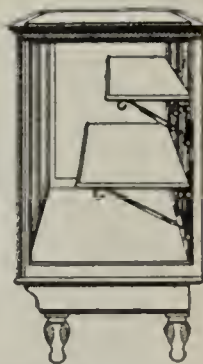
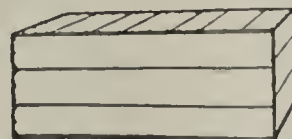
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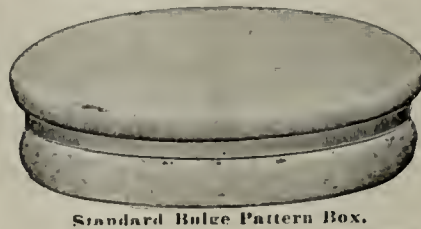
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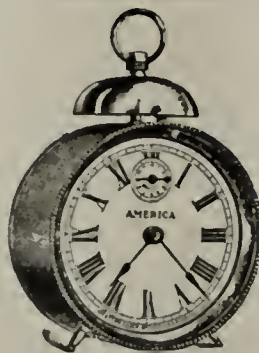
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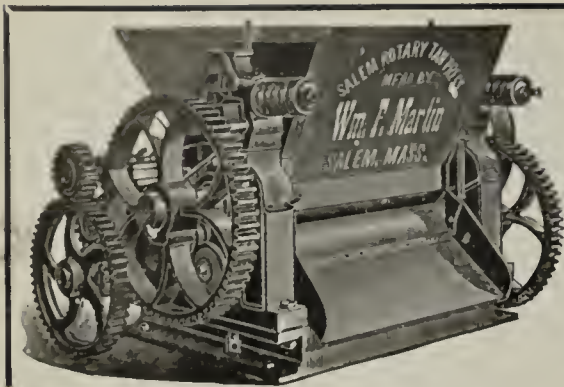
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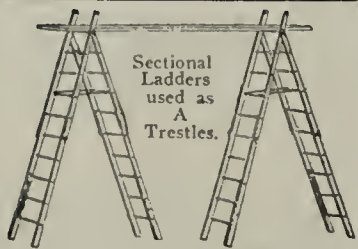
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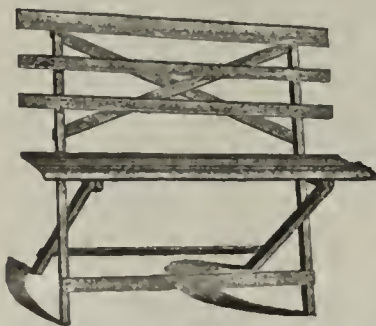
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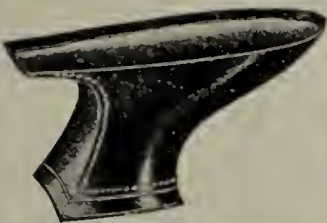
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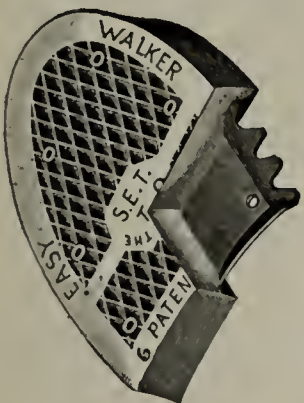
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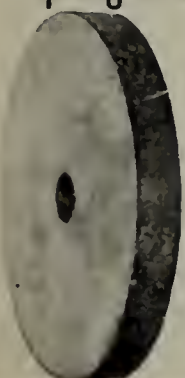
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Among the passengers on board the steamship Manchuria is W. J. Johnston, publisher of the AMERICAN EXPORTER, one of the leading journals of New York, who is traveling with the Taft party to the Philippines.

"The United States is getting only 5 per cent. of the trade in Asia," said Mr. Johnston, "and wants to get more. I intend to look up conditions in the Orient, with a view to ascertaining what opportunities there are for us to increase the trade. I also intend to take a trip to Australia for a similar purpose."—Honolulu, Hawaiian Islands, Bulletin, July 14th, 1905.



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are experience machines. The common sense every-day working models of America's greatest poultry raiser for profit. Called

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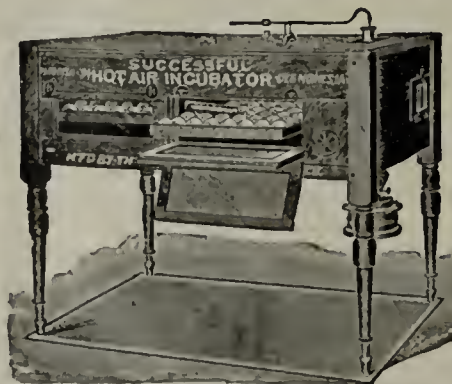
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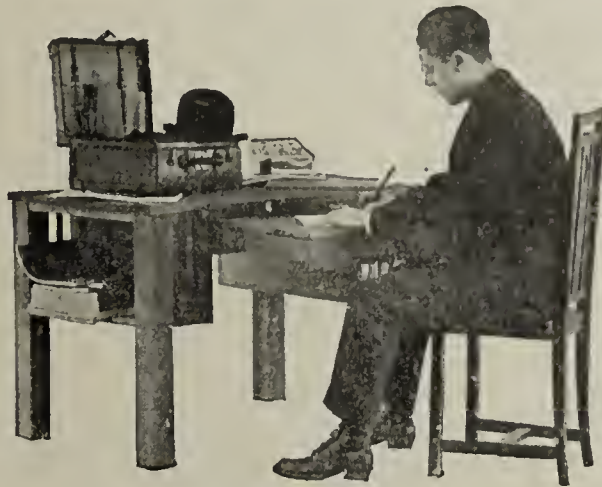
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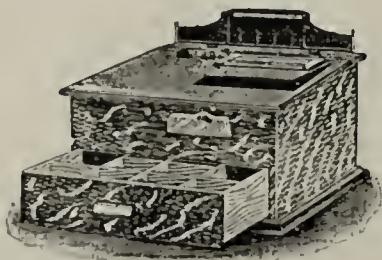
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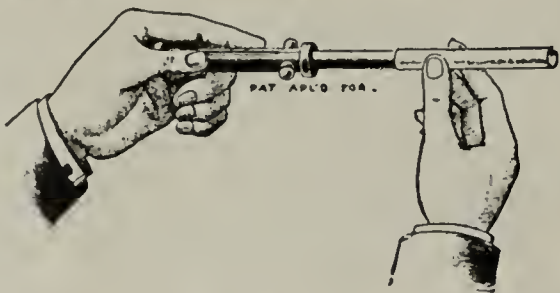
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mopping up or washing is done.

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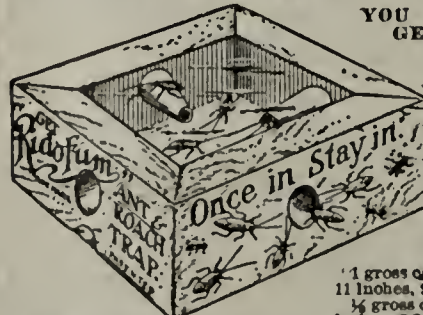
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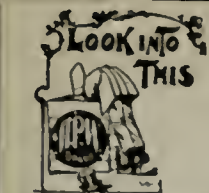


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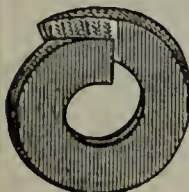
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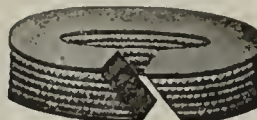
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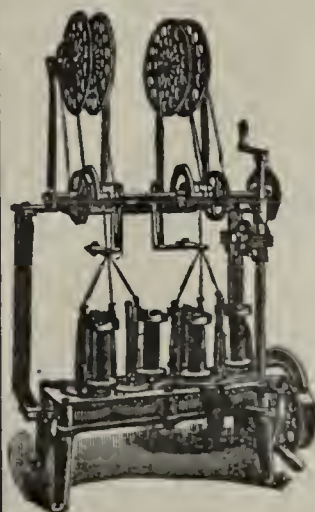
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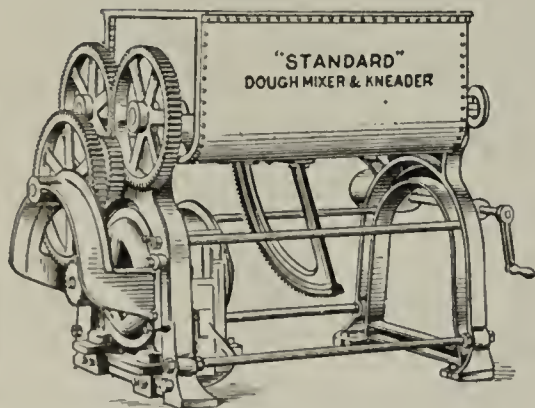
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Is the only scientific machine of its kind. It not only thoroughly mixes, but simultaneously kneads the dough. It develops all the gluten in the flour, thereby requiring more liquid, hence more dough and bread from any given quantity of flour. Time required, 15 minutes. It will increase your output over ten per cent., with better bread.

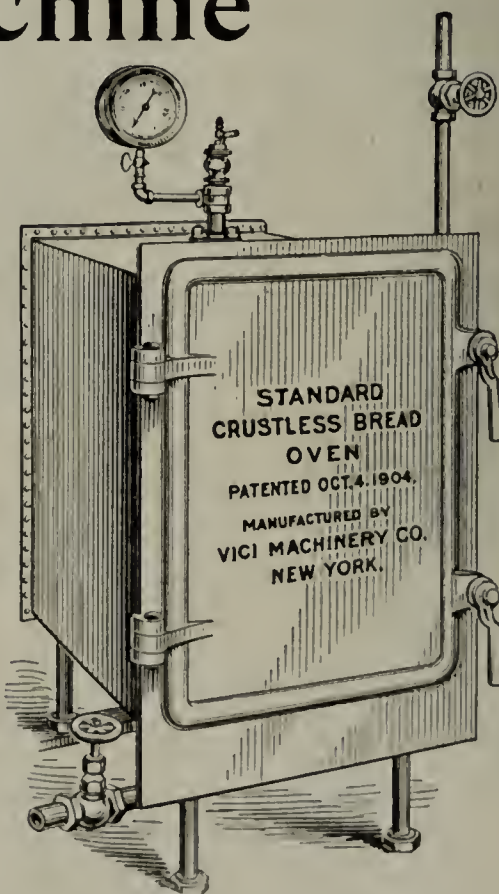
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Produces the finest quality bread without any crust. No loss by evaporation in cooking. Well-kneaded dough produces exactly its equal in bread. It is a great money-saving invention for bakers, hotels and large public institutions. The bread is unequalled for sandwiches and toast. It is now in use by some of the largest hotels and bakers in the United States.

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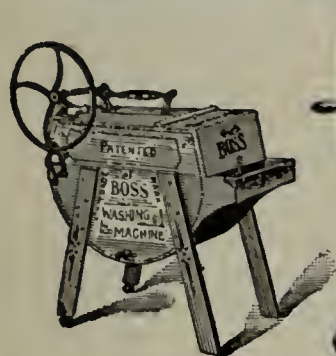
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Will cleanse any fabric quick and without the slightest injury. These machines are a

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Cut shows exactly what this machine will do in making suds.

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Indispensable for laundries and households. So easy to operate that a child can do the entire washing of an entire family. Cleans the clothes more effectively than washing by hand. Does not tear or destroy the clothes.

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6th. The people want a machine that will do the work with the least possible exertion, and this is the only ROTARY that will insure such results.

7th. High Speed, Ball-Bearing, Light-Running, Positively Noiseless. Not a Speculation, but an Investment, the Returns of Which Will Pay You ONE HUNDRED (100) PER CENT. PROFIT.

Write us to-day for prices and full particulars. We offer you terms that make this the best washing machine proposition in the market.

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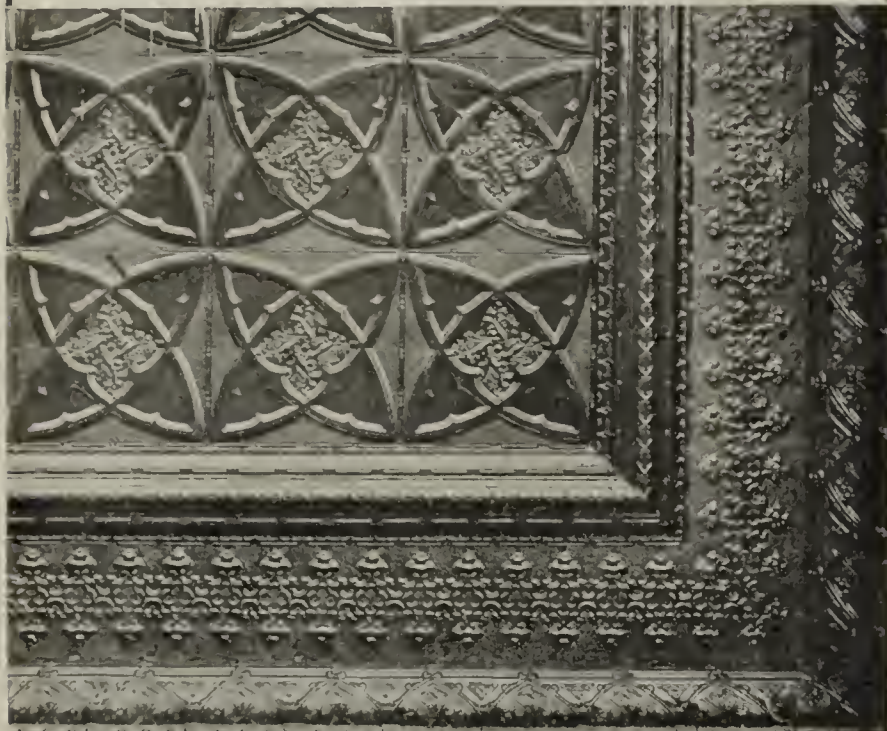
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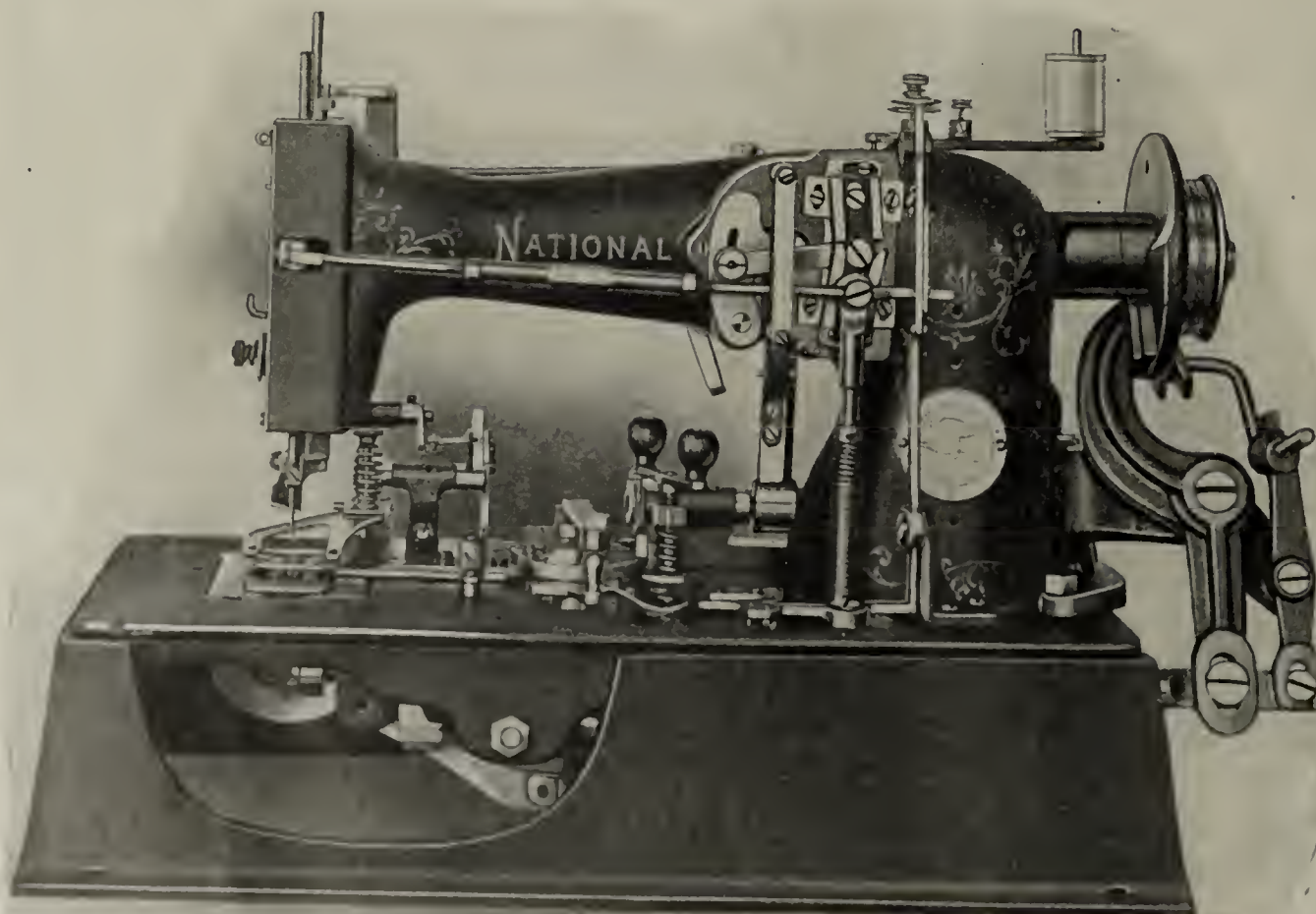
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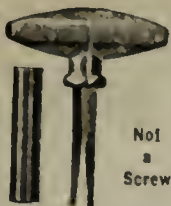
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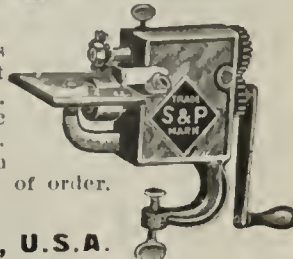
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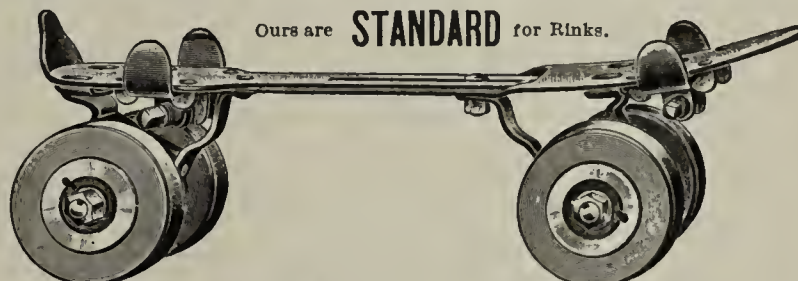


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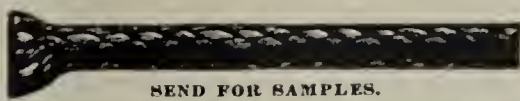


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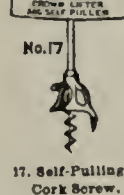
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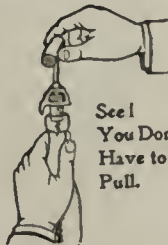
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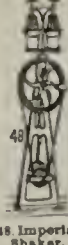
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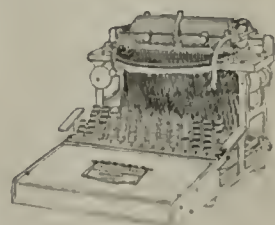
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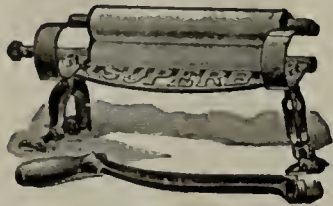
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Made in two sizes:
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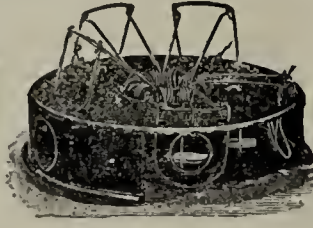
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Made from selected light-colored hardwood,
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The perfect adjustable Hoops. Sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter. The Bow-Spring in the "Princess" adjusts itself to different thicknesses of material, holding the fabric firmly and without injury.



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Made in
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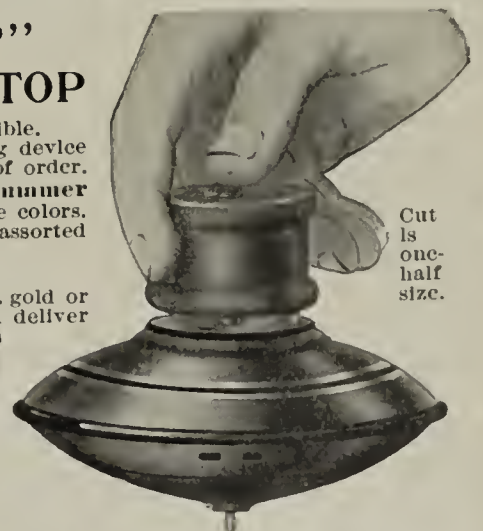
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Made of metal and indestructible.
Spun by an automatic spring device which cannot break or get out of order.
It's a Beauty and a Great Hummer.
Handsomely enameled in five colors.
Packed one dozen in box, assorted colors.

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one-
half
size.



Cut
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one-
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size.

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The funniest top you ever spun. Spins on either end, or in the holder, when inverted and held in the hand. These tops are ornamented with the National Flag colors at any country desired.

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"The Quickest Money-
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Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

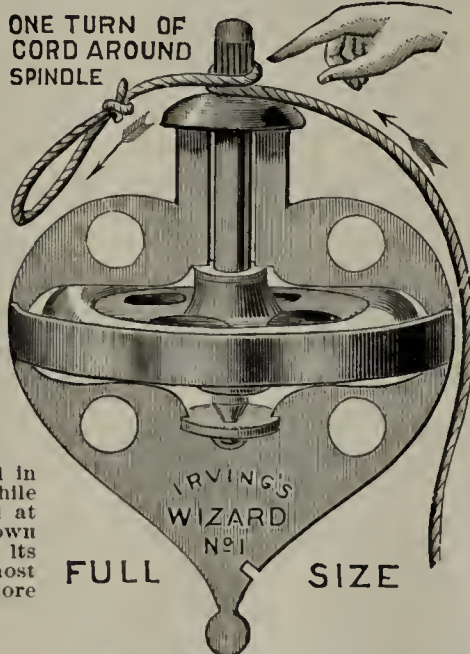
THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high-speed machine, made of STEEL, nickel-plated; capable of 20,000 revolutions per minute, and can be put in motion by a child in three seconds. Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

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Upon receipt of \$9.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, one gross (144) IRVING'S NEW WIZARD OR "GY-ROTARY" TOPS. Weight, boxed, 30 pounds. Size of box, 17½ x 8½ x 8½ inches.

ORDER NOW. YOU WILL
SURELY WANT MORE.

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FULL SIZE

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A few of the many positions in which
this wonderful top will spin.



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CINCINNATI, OHIO, U. S. A.

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Can be made with good profit, and without previous experience on our

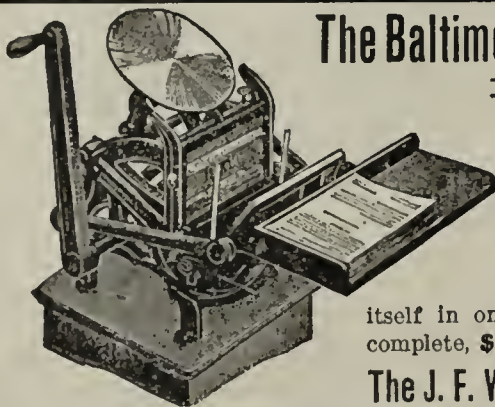
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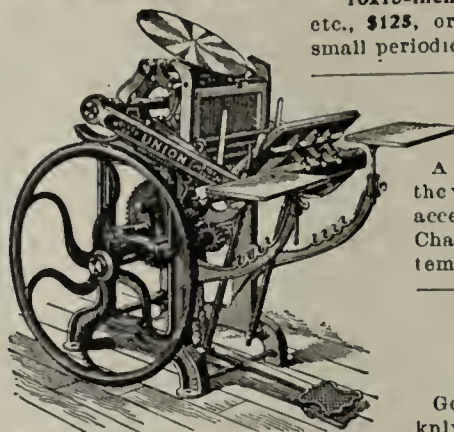


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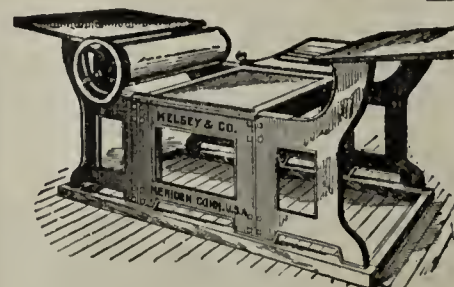


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Good hand machine with 24-inch steel knives, \$12.00.



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KELSEY & CO., Meriden, Conn., U.S.A.



Machine showing rocked position.

The WINGET CONCRETE MACHINE CO. COLUMBUS, OHIO, U. S. A.,

MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

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ORDERS RECEIVED THROUGH EXPORT HOUSES.

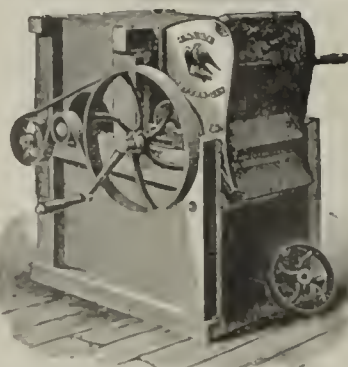
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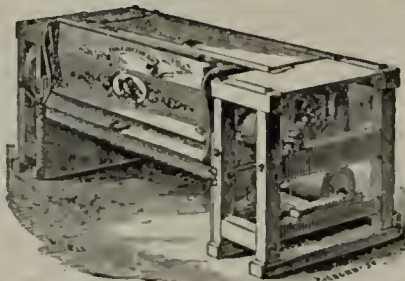


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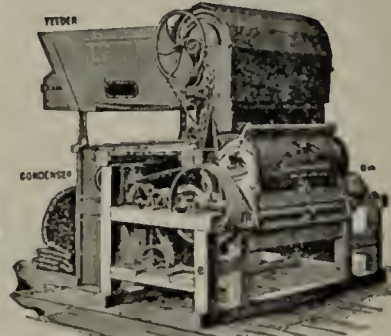
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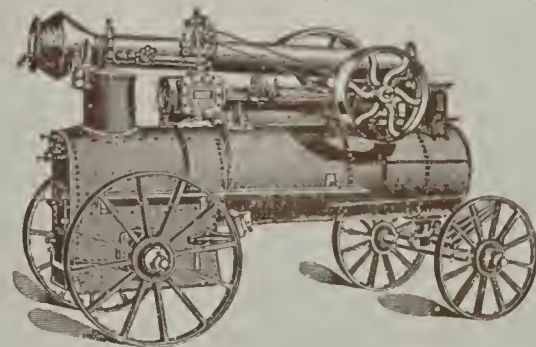
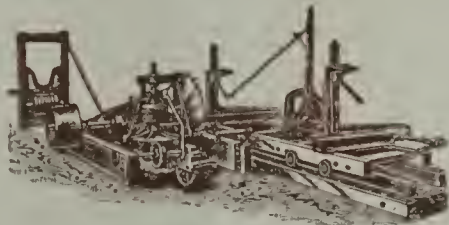
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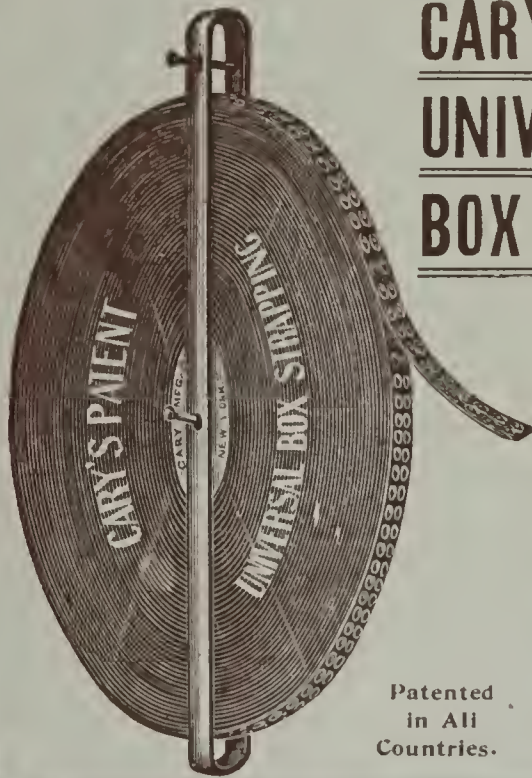
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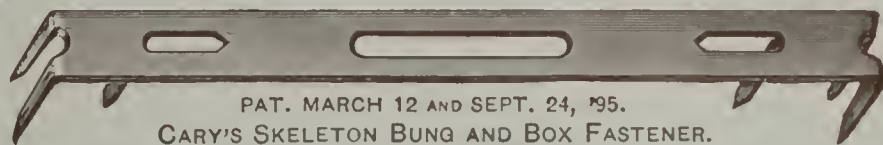
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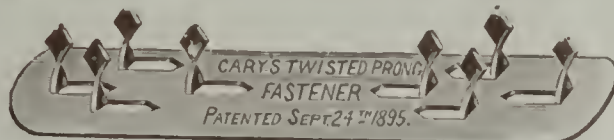


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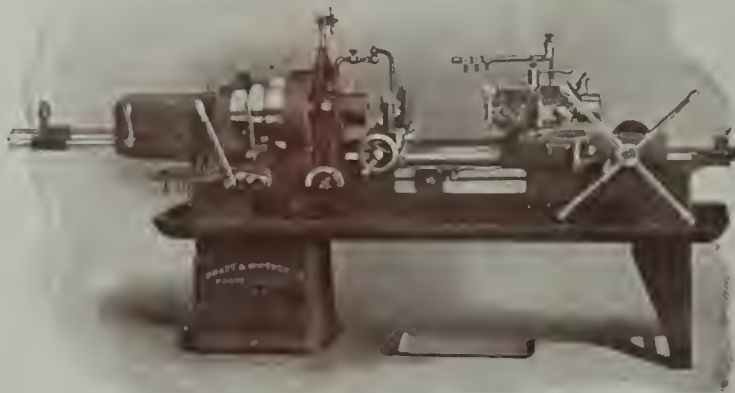
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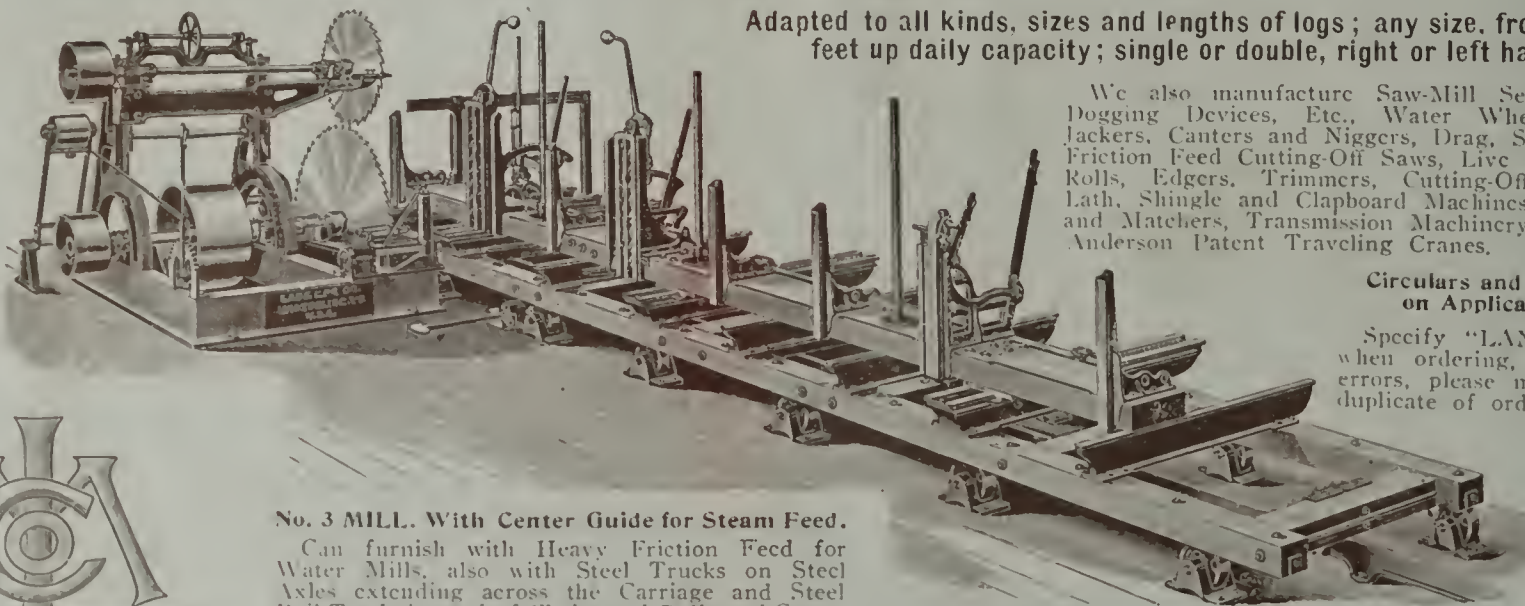
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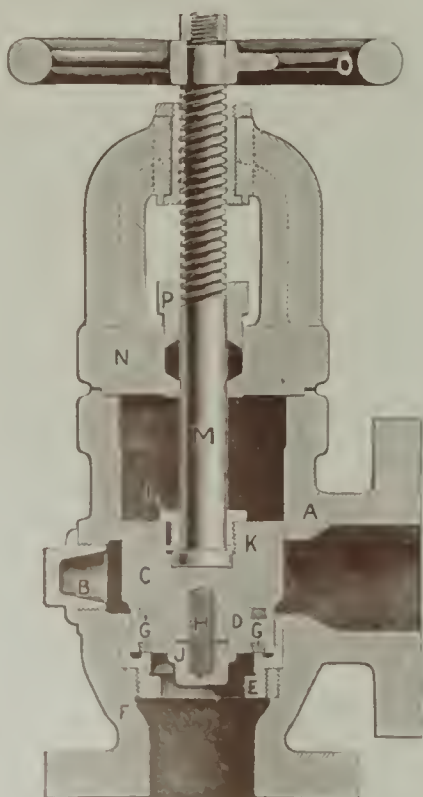
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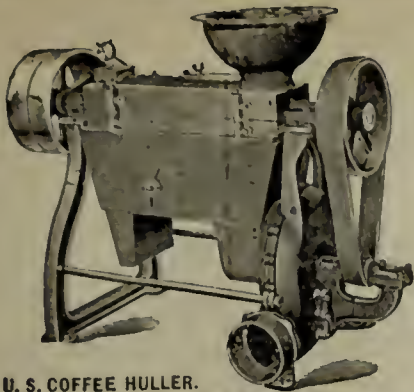
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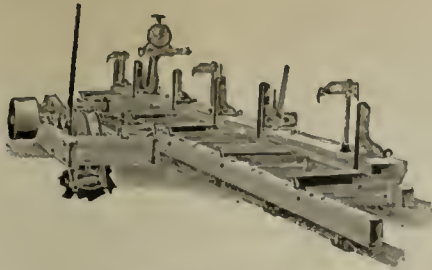


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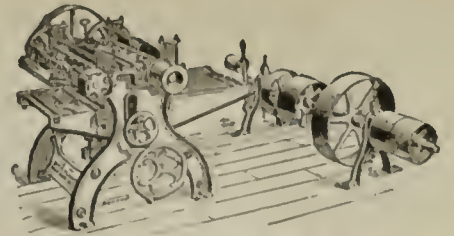


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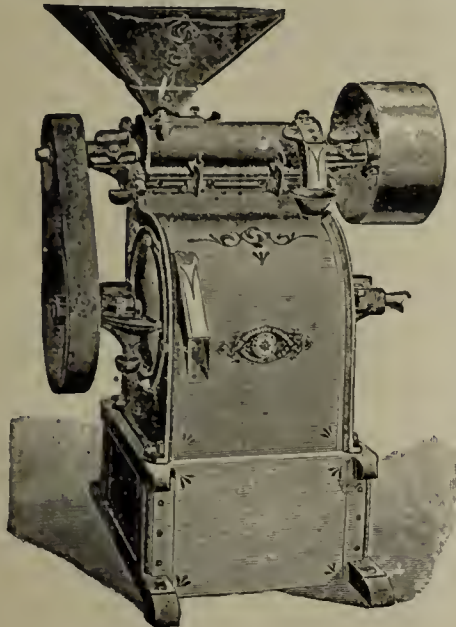
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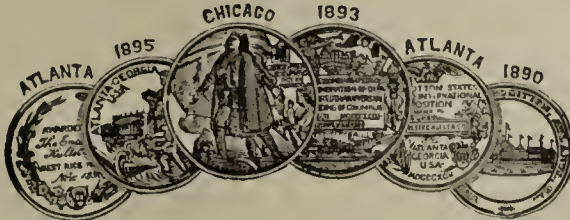


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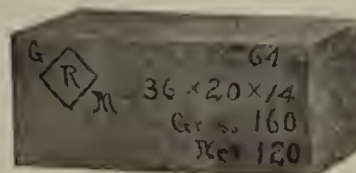
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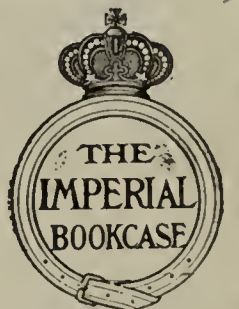
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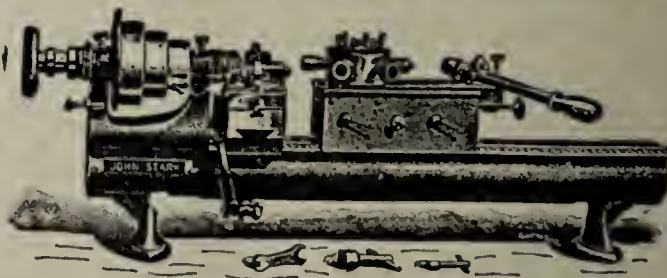
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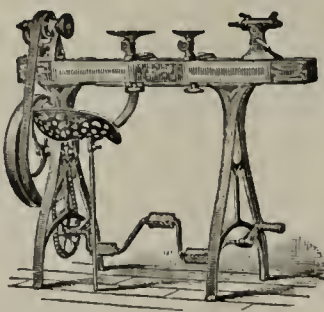
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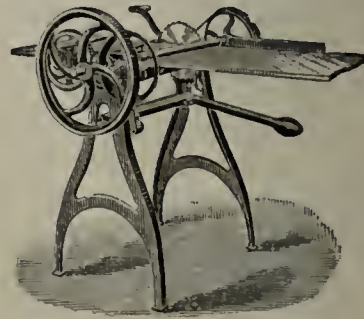
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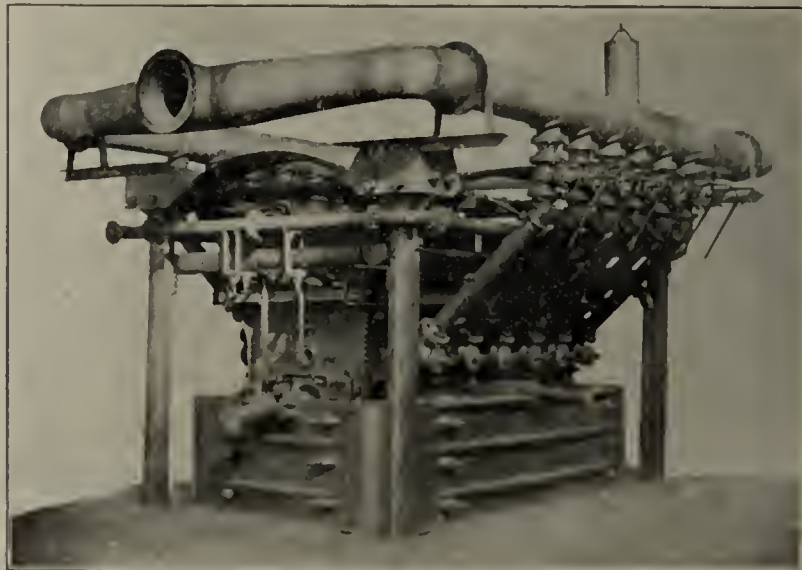
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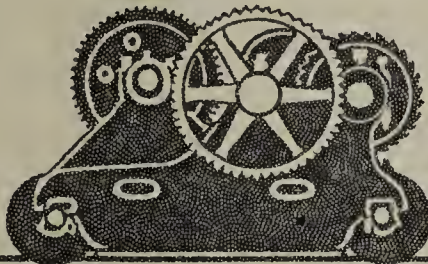
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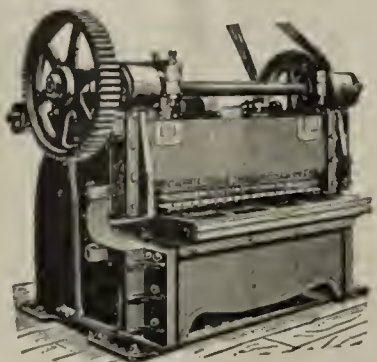
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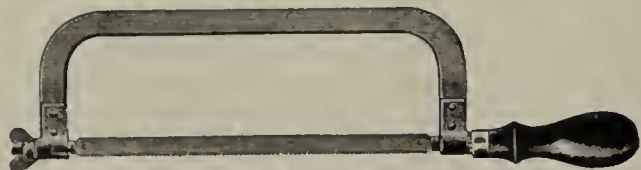


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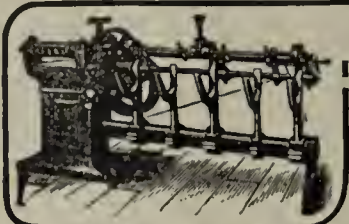
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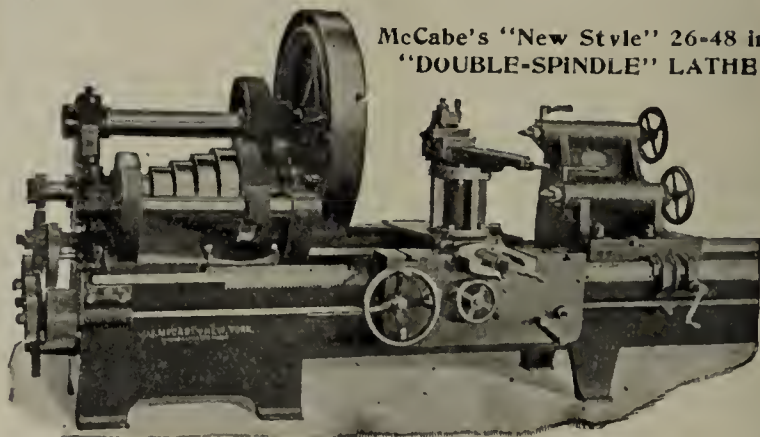
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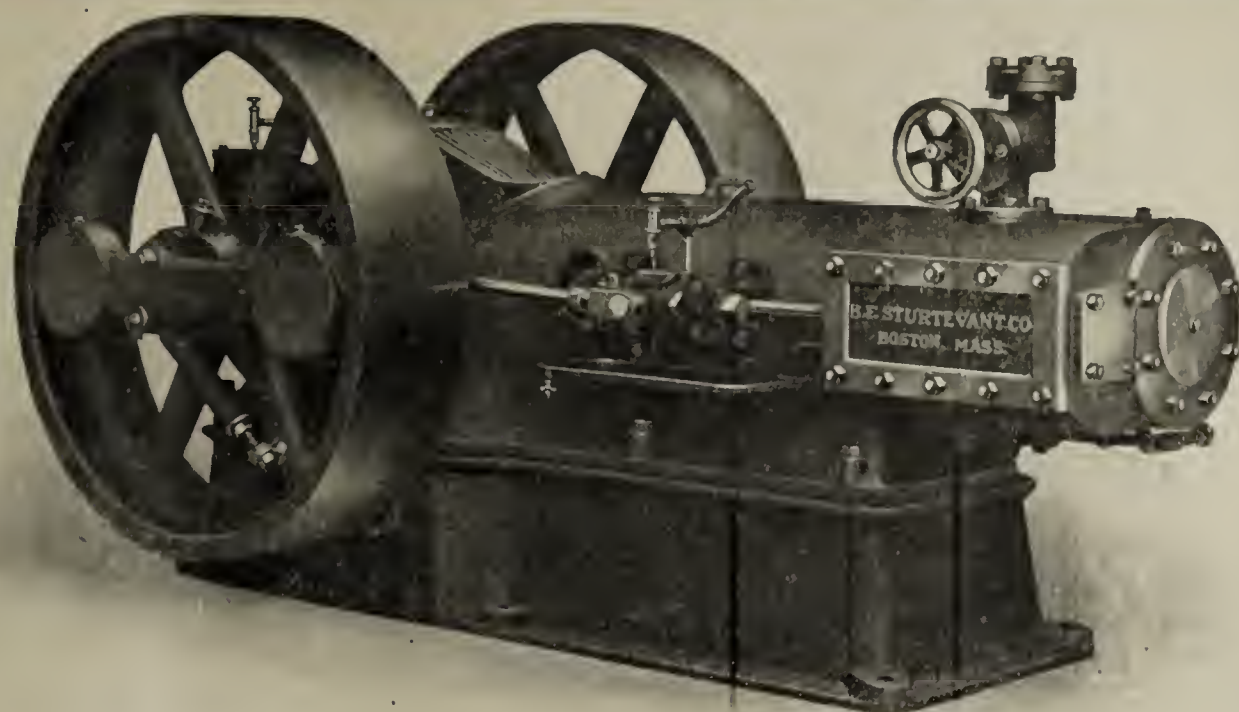
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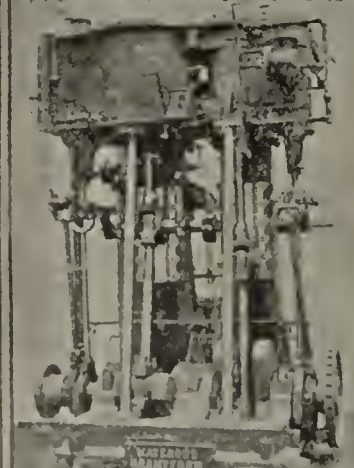


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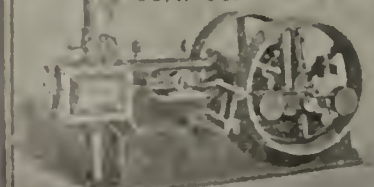
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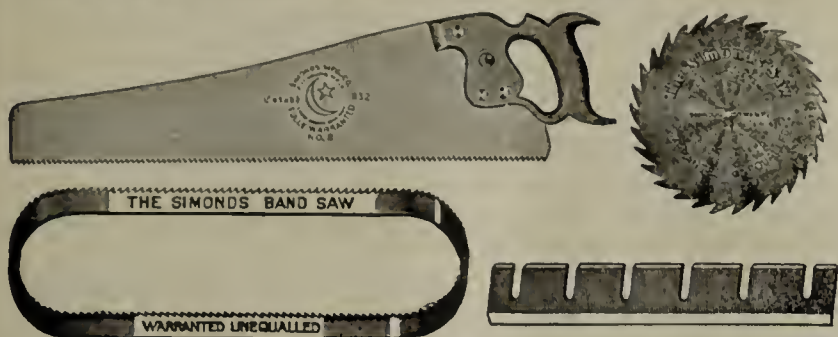
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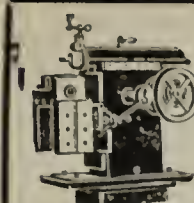
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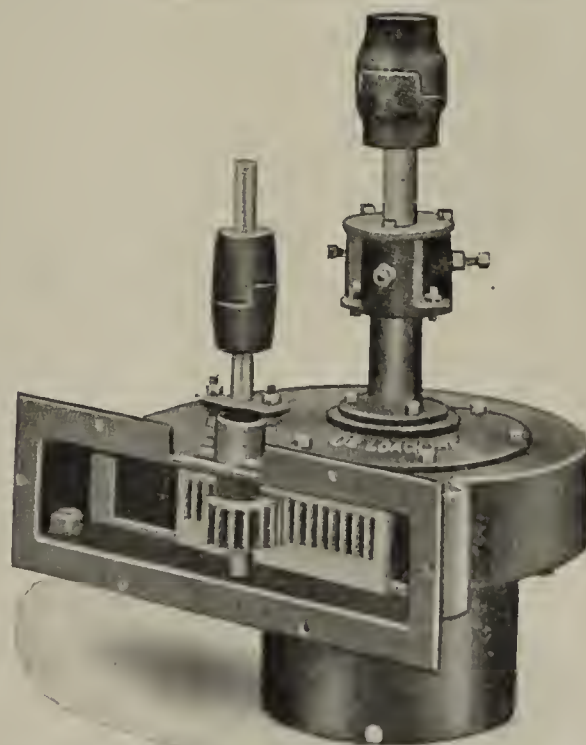
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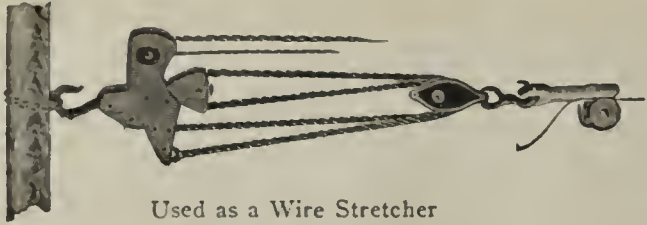
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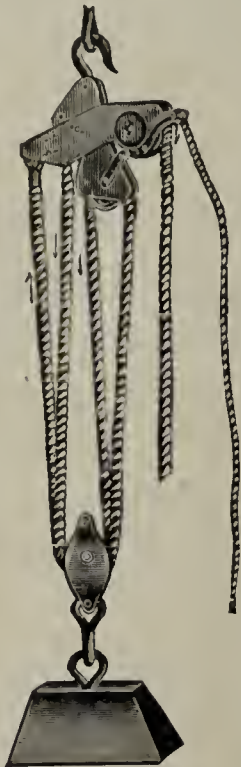
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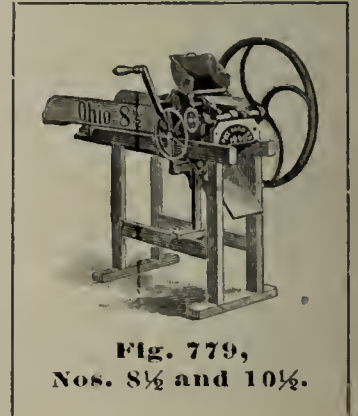
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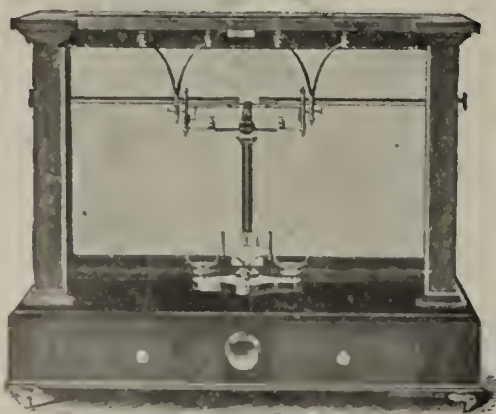
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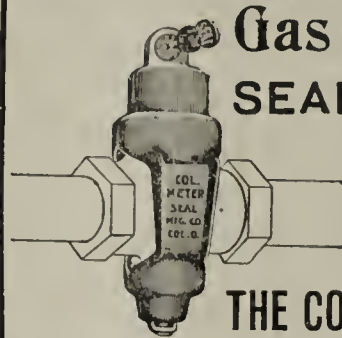
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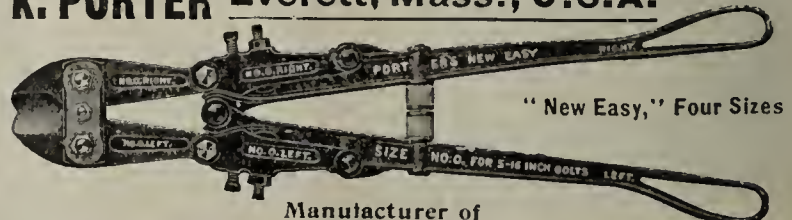


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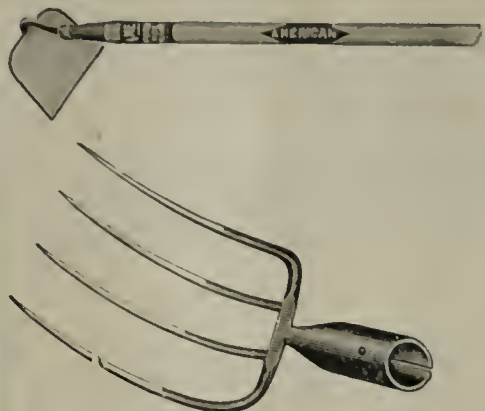
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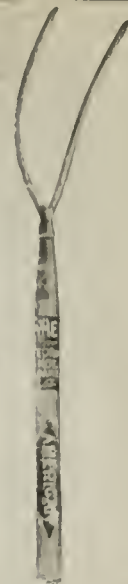
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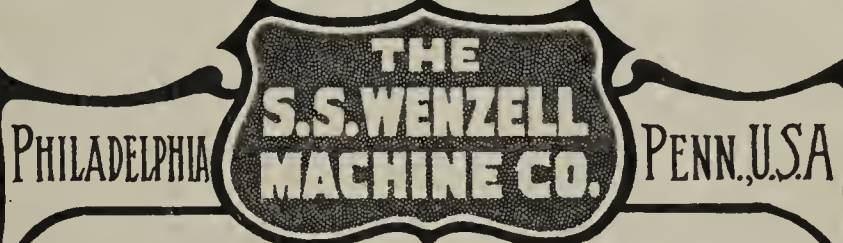
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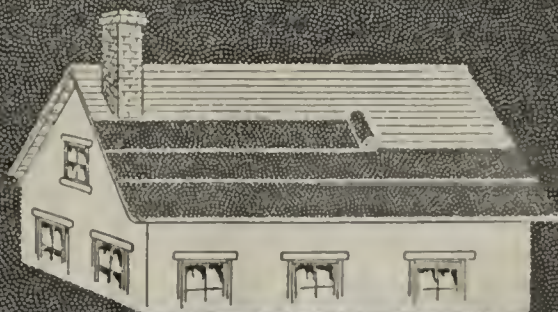
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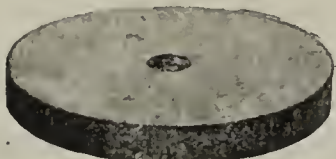
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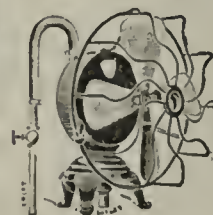
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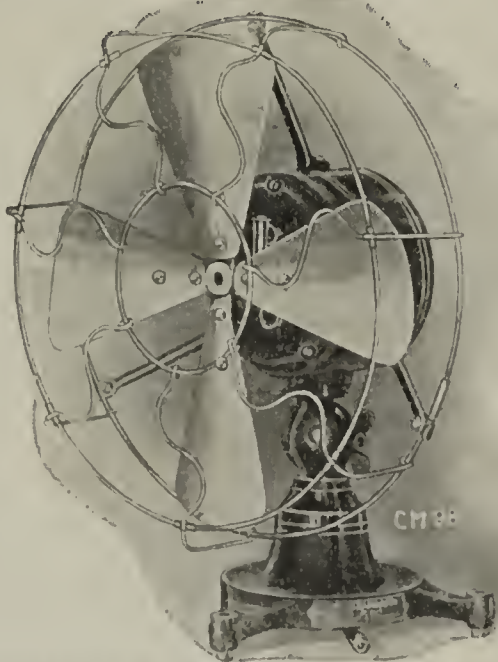
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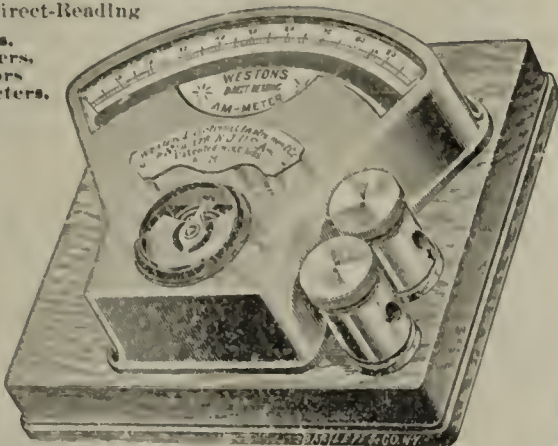
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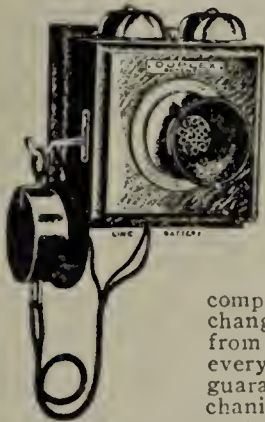
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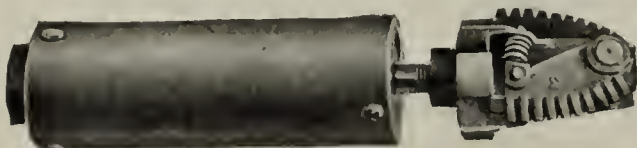
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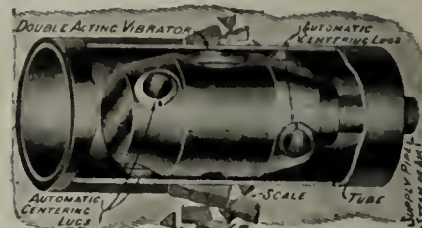
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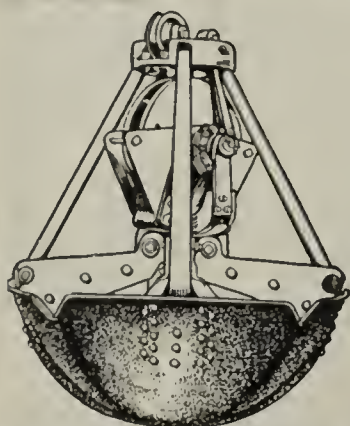
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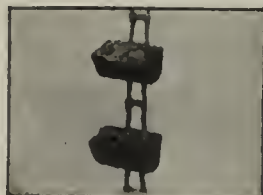
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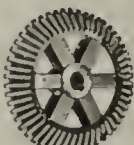


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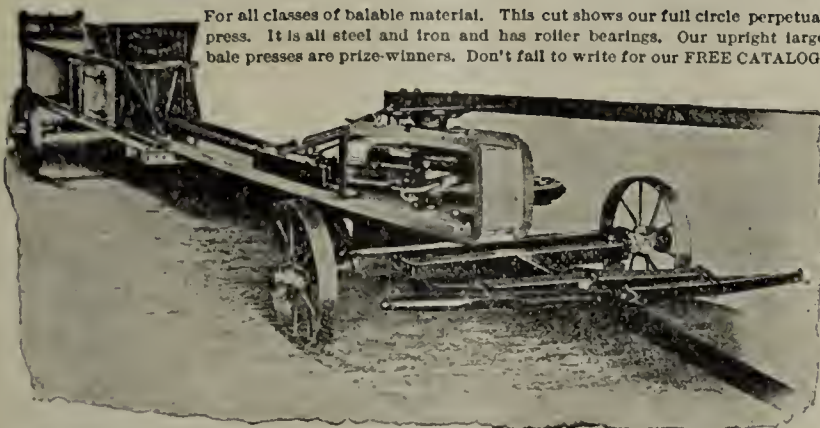
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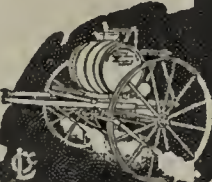
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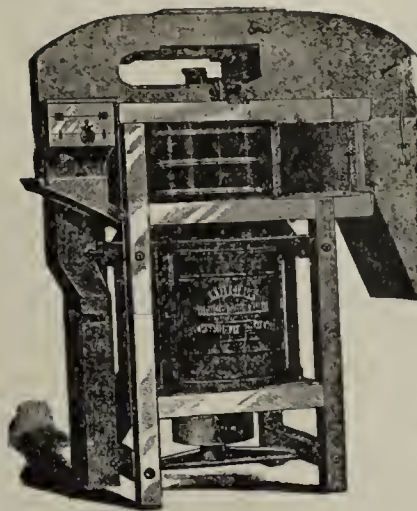
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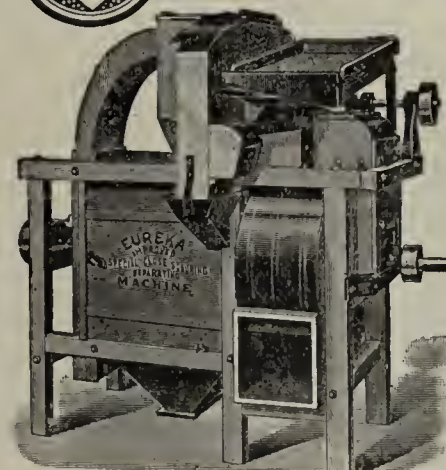


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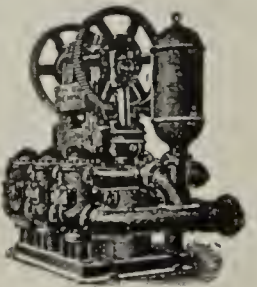
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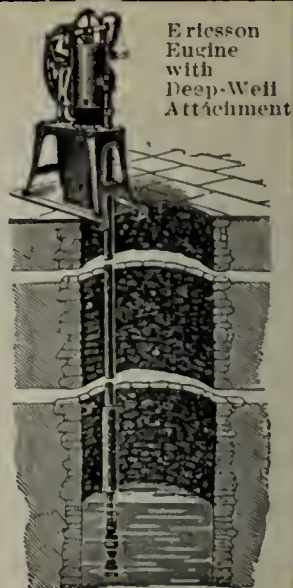
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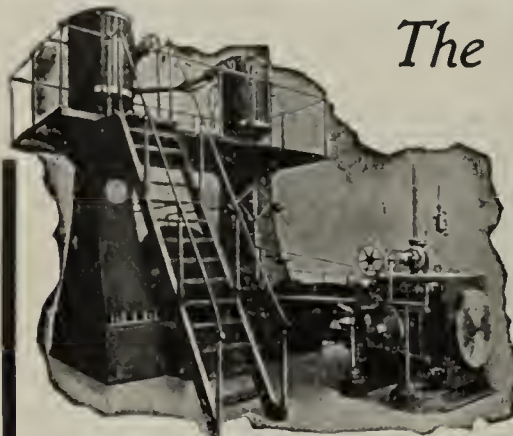
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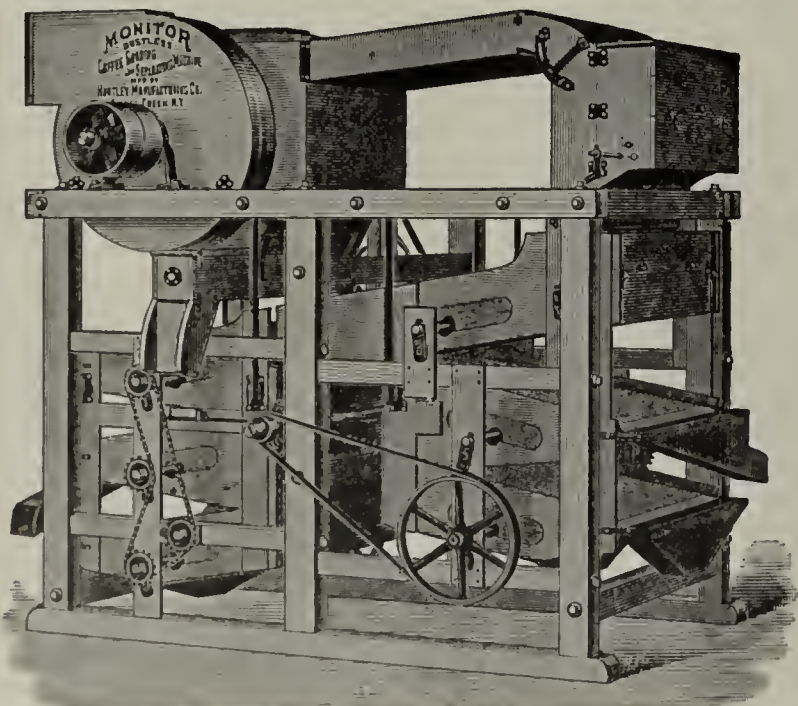
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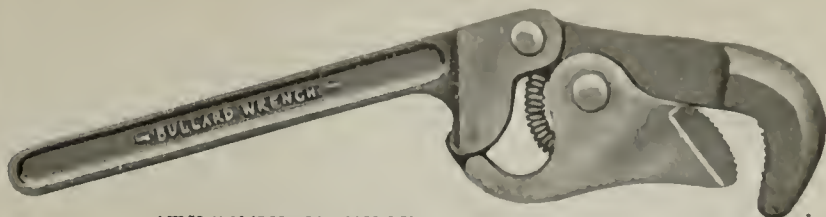
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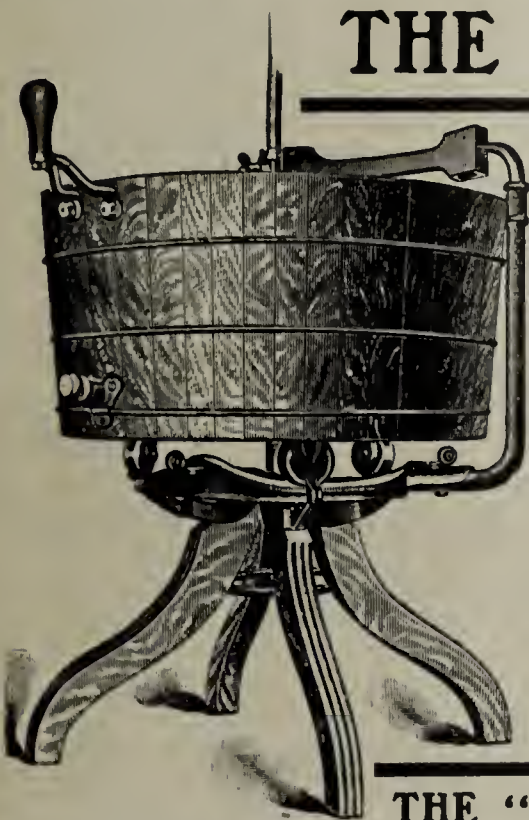
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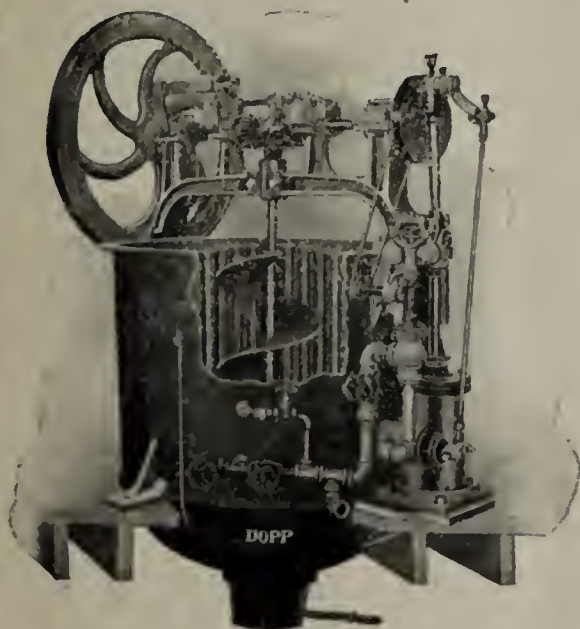
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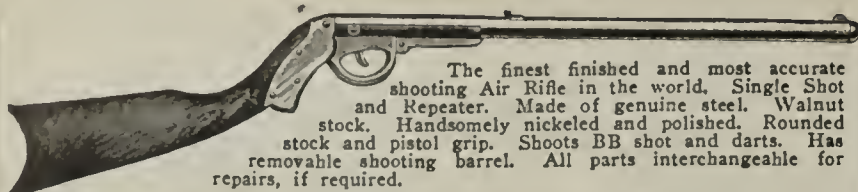
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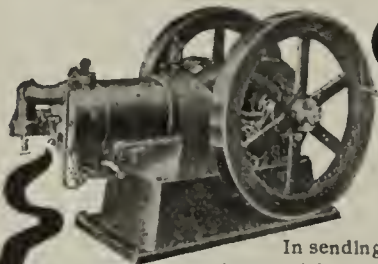
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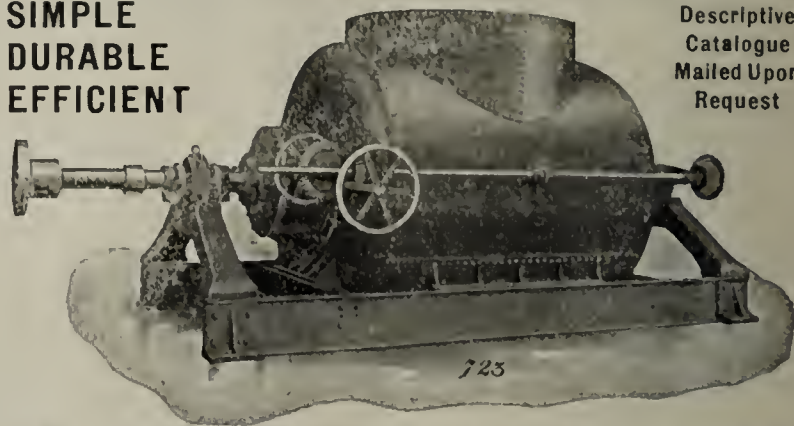
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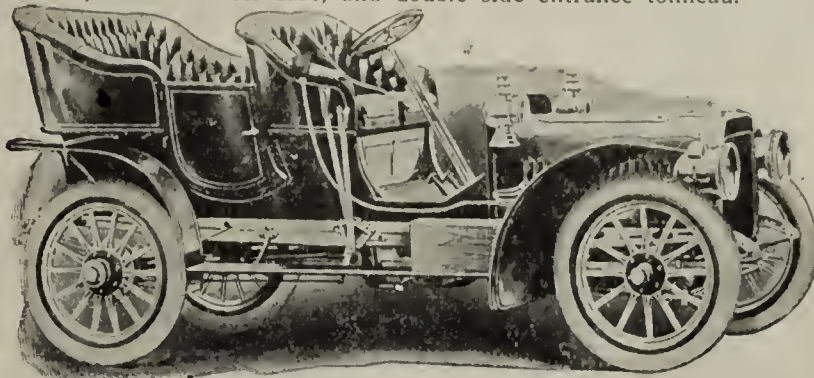
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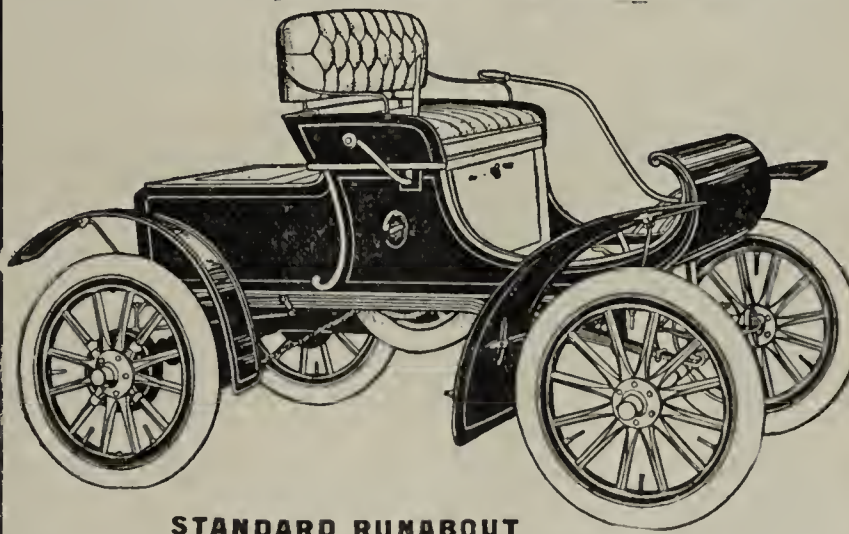
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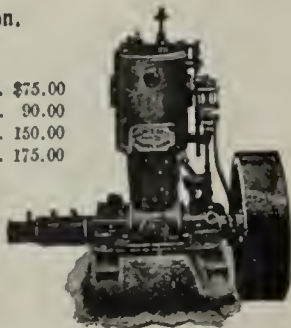
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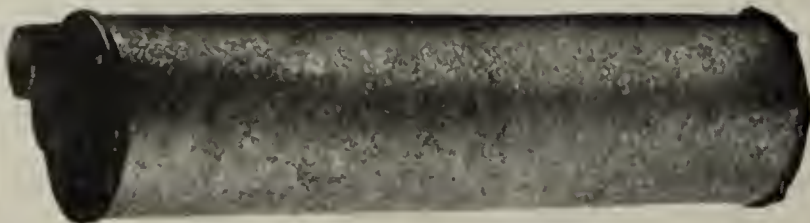
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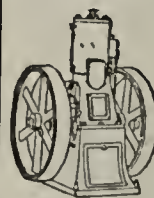
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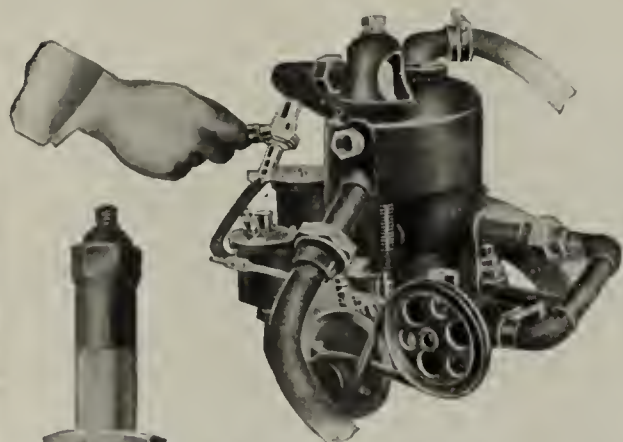


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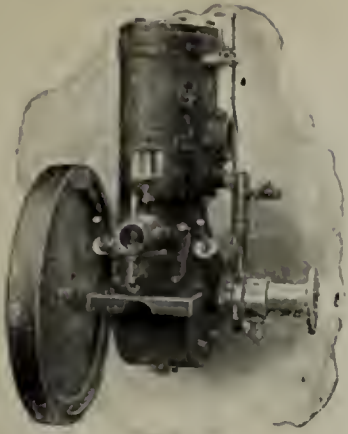
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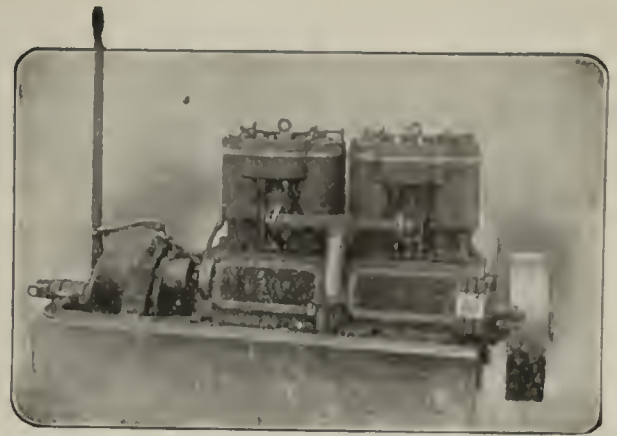
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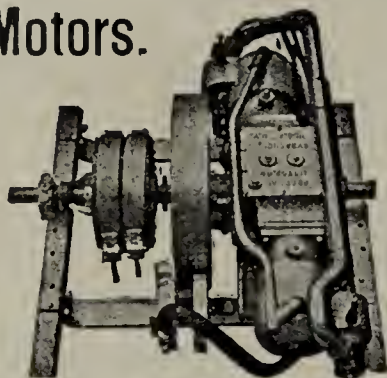
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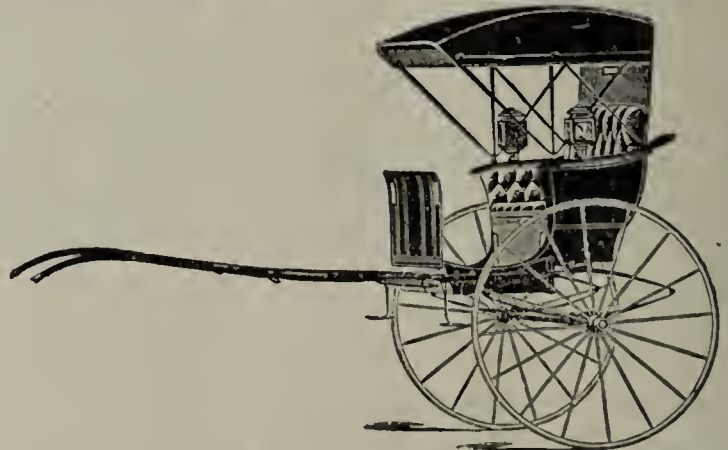
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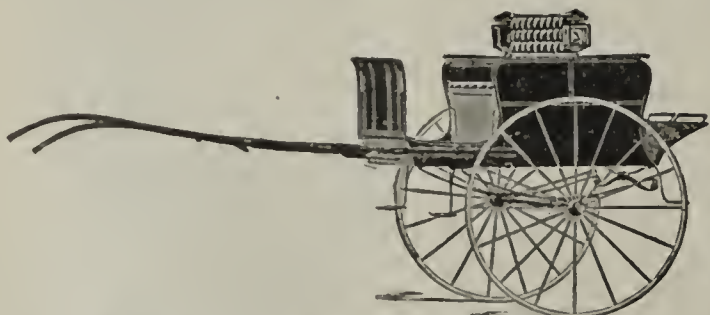
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Vol. LVI.

NEW YORK, SEPTEMBER 1, 1905.

No. 4.

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Secretary Taft in the Philippines.

The return of Secretary Taft to the Philippine Islands, of which he was so long the Civil Governor, was nothing short of a triumphal tour. Both he and his party were received with acclamation in all parts of the Archipelago. There are indications that the views of the prominent legislators of his party have been radically altered by personal observation of the conditions which there exist. It is confidently expected that legislation favorable to the Philippines will be introduced into Congress by some of the Senators and Representatives who have formerly been regarded as its strenuous opponents.

The publisher of the AMERICAN EXPORTER has devoted his personal attention to the investigation of trade conditions in the islands. He has had interviews with the leading import merchants in every important commercial city of the Philippines, and on his return to the States will be able to serve the interests of manufacturers who are, or ought to be, shipping their products to the Philippines.

The Commerce of the Philippines.

The importance of the Philippine Islands as a market for American goods justifies the large space devoted to that subject in the present issue. The statistics given have been forwarded by the publisher of the AMERICAN EXPORTER, after having been approved by Government officials. They not only show the progress that has been made under American rule, but also indicate the character of goods most in demand. All that has been done in this direction, however, can be considered but a beginning. There can be no doubt but that, stimulated by the recent visit of Secretary Taft and party, and the favorable legislation which will probably be enacted at the approaching session of Congress, the commerce of the Philippines will attain proportions never before known in their history.

The Dawn of Peace.

Contrary to all recent expectations, the peace negotiations between the Japanese and Russian envoys at Portsmouth, N. H., have terminated in a treaty of peace, the Japanese having suddenly withdrawn their demand for indemnity. As we go to press the terms and conditions have all been ratified, and only await the signatures of the contesting parties. Cablegrams from all parts of the world indicate the universal belief that this happy termination is due to President Roosevelt more than to any other man. It was not only his intervention which brought the envoys together, but it was due to his earnest and continued personal efforts that negotiations were not broken off before the conclusion of peace.

The commercial significance of the terms will readily appear to the readers of the AMERICAN EXPORTER. Japan is practically the master of the Far East—and Japan is unalterably committed to the policy of the "open door." Before and during and after the war her statesmen announced this policy, and there is no reason to doubt their sincerity.

Retirement of Assistant Secretary Loomis.

Hon. Francis B. Loomis, First Assistant Secretary of State, whose activity in promoting the interests of foreign trade has been frequently mentioned in our columns, will retire from that office on October 1st. It is expected that he will be sent as Ambassador to Brazil or to some other important country whose trade relations with the United States are extensive. The state of Mr. Loomis' health is such, however, that for a time he may be assigned by the President to special duties in connection with the reorganization of the American consular service. It is well known that Mr. Loomis has taken a deep personal interest in this problem. During his recent visit to Europe he made special study of European methods, with a view to the improvement of the present system.

Secretary Loomis will be succeeded by Mr. Robert Bacon, a New York capitalist of proved ability. It is believed that Mr. Bacon also will take personal interest in the development of closer commercial relations between the United States and other countries.

Spanish Tariff on Lumber.

The AMERICAN EXPORTER'S staff correspondent, while making a recent tour of Spain, noted that a strong effort is being made on the part of certain individuals to influence the Spanish Government to increase the tariff on American lumber. Large shipments of pitch-pine go yearly from Florida ports, and considerable quantities of hard woods from the Mississippi region. The quality and price of these shipments have been such that those interested in other lumber districts desire to have the Spanish tariff increased to such a point that it will practically exclude all American lumber.

Mr. William M. Collier, the American Minister at Madrid, in connection with his consular aides in the leading commercial cities of that kingdom, has made a vigorous protest. The EXPORTER'S representative, after conference with lumber importers and merchants in Barcelona and Madrid, has reason to believe that the efforts to exclude the American lumber will not be successful.

The new ministry, with Sr. Monte Rios as President, is very liberal in its policy, and will doubtless not consent to favor a few individuals at the expense of the consumers.

America and the World's Railways.

The young nation which furnished the inventor of the steam-boat seems destined to be the reconstructor of the world's battleships for the nations as they meet defeat upon the high seas. So strong has been the demand made by foreign governments upon the resources of American armor-plate works that the United States is being almost driven to the necessity of constructing its own men-of-war.

Likewise, the country which successfully operated the first railway bids fair to be the constructor of the railway systems of the world. The magnitude of American railway enterprises has furnished our engineers and machinists with an experience in designing and operating railroad machinery which is unequalled anywhere else in the world. For this reason, the American is a familiar figure in any region where railway operations are contemplated on a large scale.

The speed with which orders are filled, due to the large capacity of the American works, has had much to do with creating the demand alluded to. A recent order from Japan illustrates, not so much the purpose of that empire, as the popularity of the American railroad builder. Rush orders

have been placed with corporations in the United States, calling for 350 steel bridges, 150 locomotives and 2,000 steel cars, to be used in Manchuria. The material for the bridges was to be ready for shipment in two months, while the cars were to be completed within thirty days. It may safely be assumed that no other nation would accept a contract dependent upon such rigid conditions.

The Scale of American Operations.

A feature of American business life which excites the wonder of the foreign visitor is the magnitude of its commercial transactions. The United States is a much larger country than is usually supposed, and its inhabitants transact business in a large way. The capacity of its harbors, the height of its buildings, the depth of its mines, the extent of its railway systems, the wealth of its forests, the extent and fertility of its agricultural lands, are but a few of many examples.

The development of the corporation idea, though attendant with many evils, is eminently adapted to the American genius. The combination of a number of factories into one gigantic plant, the consolidation of individual railways into great trunk systems, the concentration of billions of capital in single institutions, and other similar movements characteristic of the times, enable the American to easily distance his competitors in whatever field he chooses to enter.

There are abundant reasons for believing that America has turned a covetous eye upon the world's foreign trade. As a rule, shipments in the past have been spasmodic and generally unsolicited. The world's markets have never been studied with the deliberate purpose of supplying them with American goods. The present activity of the Government's special agents, however, in connection with the enterprise of export publications and private corporations, affords an idea of what may be expected in the immediate future. The construction of the Panama Canal would never have been undertaken by a nation oblivious of the possibilities of foreign trade.

Foreign merchants buying their goods abroad may expect that the United States will conduct its export trade on the same scale with its operations in other lines. The American manufacturer will not be so much concerned with the sale of rakes and hoes in Russia and Argentina, as with harrows and threshing-machines. He will not decline orders for collar-buttons and pocket-knives, but these will be mere incidents in comparison with his sales of electric drills and steam pumps. While doing a large business in novelties which may be sent by parcels post, his export trade will be calculated in tons and ship-loads.

These are the lines along which the American manufacturer desires that his foreign trade develop. The shipments of food-stuffs are, of course, dependent upon the law of supply and demand. The tremendous trade of the United States in raw products will necessarily decline, for the reason that in the future these resources will be utilized in the home factories.

America's export trade in machinery and other manufactured products will depend chiefly upon the purchaser's familiarity with their points of excellence. It is for the purpose of rendering mutual assistance to the manufacturer and to the purchaser that the AMERICAN EXPORTER was established. It designs to acquaint the foreign buyer with the superiority of the products turned out by our workmen, believing that when once fairly introduced they will meet all competition.

JAPANESE COMMENT ON THE "AMERICAN EXPORTER."

In a cablegram published in our August issue, Mr. W. J. Johnston, publisher of the AMERICAN EXPORTER, who is now *en tour* with Secretary Taft's party, mentioned the prominence given the commercial representatives in the columns of the *Advertiser*, Yokohama's English daily. We are glad to reproduce below the article in question:

"The arrival of the Taft party in Tokyo was greeted with enthusiasm greater than any witnessed for months. Large American and Japanese flags were strung from crossed staves in front of the Shimbashi station. Flags of all nations attached to ropes were stretched in colored clouds over the front square of the station. Banners and streamers, each stamped with the distinctive badge of the public bodies represented, were banked on either side of the approaches to the station. On the western side of the square were assembled the municipal officials of Tokyo with the military band at the southern end. Among those at the station were Princess Iwakura, President of the Patriotic Ladies' Association; Marchioness Nabeshima, Vice-President; Princess Kujo and over one hundred other prominent ladies; Lieutenant-General Ishimoto, Vice-Minister for War; Lieutenant-General Nagaoka, Vice-Chief of the General Staff Office; Vice-Admiral Ijuin; Baron Hanabusa, Vice-Minister of the Imperial Household; Prince Tokugawa, President of the House of Peers; Governor Senge, of Tokyo-fu, members of the Diet, the members of the American Legation, Count von Arco Valley, German Minister, and a large number of other distinguished officials.

"Two officials of the United States Department of Commerce and Labor, and the editor of the AMERICAN EXPORTER, an authoritative commercial journal of New York, arrived on the Manchuria with the Taft party Tuesday, their object in coming to the East being a thorough investigation of trade conditions and the possibilities of increasing the sale of American goods in the Orient. Mr. R. F. Crist, one of the United States Commissioners, will devote seven or eight months to the study of present day trade conditions and future prospects in Japan and Corea. Mr. H. R. Burrill, the second Government Commissioner, will devote his time to Formosa and the coast and river ports of China. The editor of the AMERICAN EXPORTER, Mr. W. J. Johnston, will call upon the principal import merchants of the Japanese seaports and the great manufacturers, with a view to bringing together the Japanese buyer and the American producer.

"The coming of this official commission and of the editor of the American commercial paper is of peculiar significance to Japan. Commissioners Crist and Burrill will keep constantly in touch with Secretary Metcalf of the Department of Commerce and Labor, to whom they will make direct reports. Mr. Johnston, the editor of the AMERICAN EXPORTER, will bring the results of his investigations before the manufacturers and shippers of America through his journal. In this way the business men in the States will be advised directly and accurately of trade opportunities in Japan and the Far East generally, and will be enabled to know just what wants there are in this country and how best to fill them.

"The dispatch of the two special commissioners to the Far East is a direct recognition on the part of the United States Government of the tremendous commercial opportunities that will be opened to that nation at the close of the war," said Mr. John-

ston, yesterday, in an interview with an *Advertiser* representative. "The manufacturers and business men of America feel the necessity of getting directly into touch with the situation in Japan and China, so that when peace is declared and these nations are thrown open to the trade of the world the United States, which is logically the source of supply for the Orient, may be first on the ground. We feel that under Japan's supervision there will be a practically new field of trade opened up in Manchuria and Corea. It is to determine upon how American manufacturers and exporters can best supply these new markets to be opened that the commissioners have been despatched."

"The AMERICAN EXPORTER, of which Mr. Johnston is editor, was established twenty-eight years ago, and is the pioneer publication of America devoted to the upbuilding of a world-wide demand for American goods."

AMERICAN METHOD OF PACKING.

Criticisms are occasionally made in the public press relative to the American method of shipping goods to foreign countries. It has been claimed that exporters disregard, in particular, the requirements as to packing. In view of this adverse criticism, it is a pleasure to call the attention of foreign merchants to the following tribute from one of our chief competitors, published in a recent number of the *British Trade Review*:

"The smaller the cubic measurement in which the goods can be packed the less is the freight, storage, cartage, wharfage, and sometimes the duty.

"American goods, and sometimes German goods, are more closely packed than British goods, without in any way increasing the risk of breakage or damage. Whenever a duty by measurement has been placed on any article in Victoria, it has been found that the Americans have proved themselves able to place a greater quantity in a cubic foot than the British.

"A feature of United States packing is the more general practice of making up articles into trade packages—that is, into packages which can be bought and sold in the cases in which they are imported. Clocks, lamps and many such articles are sent in cases of unvarying size and containing a suitable number of articles for sale to retail shopkeepers, when similar goods from the Continent or from Great Britain would be sent in larger cases of irregular size, designed for no other purpose than to convey the goods to Melbourne. Further, the United States use largely specially prepared pitch paper for lining cases, where the British use metal. The experience in Victoria is that the pitch paper is as effectual in preserving goods as metal, and that it is lighter and more convenient.

"In the boxing or 'get-up' of small goods the United States manufacturers excel. They use cardboard boxes in numerous instances where the British pack in brown paper parcels, and the United States practice is held to be preferable, for the reason that the box is suitable for placing on the shelves of a shop. As regards the goods which are packed in boxes in Great Britain and the United States, the boxing is nearly always better done in the latter country, the boxes being stronger and more sightly. British goods can commonly be picked out in the stock of a hardware store by the greater number of broken boxes."

The source from which this tribute to the American method of packing comes gives it greater weight. It cannot be claimed that a British export paper is partial to Americans.

TRADE CONDITIONS IN THE HAWAIIAN ISLANDS.

(Special Staff Correspondence.)

HONOLULU, Hawaiian Islands, July 15.—On arrival at Honolulu, Secretary Taft and his party (consisting of seven United States Senators, twenty-four Representatives and two score or



S.S. "MANCHURIA."

more of men well known in government and commercial circles) were welcomed by a military salute. A delegation representing the commercial

interests of the Hawaiian Islands also boarded the *Manchuria*, and the members of the party were decorated with wreaths of flowers after the Hawaiian custom and entertained throughout the day in the hospitable manner for which the residents of the Pearl of the Pacific are famous. At luncheon at the Royal Hawaiian Hotel, appropriate addresses of welcome were made and responded to. Facts relating to commercial conditions, gathered by the publisher of the *AMERICAN EXPORTER*, will, however, prove of greater interest to the readers of the publication than would reports of addresses largely social in character.

Hawaii's Business Life.

Hawaii's business activity dates back to the earliest days of Pacific trading, when sandal-wood was not only the chief export but practically the medium of exchange. With the coming of the whalers, Hawaii was their winter rendezvous and point of transshipment, and trading houses, supply stores and shipping agents flourished. Then were laid the foundations for many modern fortunes. For more than half a century, the best and newest things produced in every land have been imported. There are business houses here with branches in the principal cities of America and Europe.

Principal investments at the present time are in the shares or bonds of sugar producing companies or transportation corporations. There are some fifty-six incorporated plantation companies, some of which have issued gold 6 per cent. bonds for improvement purposes. There are railroads and steamship lines within the group, all doing well, whose stocks and bonds are considered conservative investments.

Most business houses are controlled by men who have grown up with the country or have been imported to fill special openings. Business connections are so well established that it is not often that new stores are opened.

Imports and Exports.

Imports into Hawaii for the year 1904 were \$15,481,034 and the total exports were \$25,172,549. The trade with the mainland of the United States was as follows: imports, \$11,683,393; exports, \$25,133,533; coffee, \$169,232; hides and skins, \$74,331; fruits, \$127,725; wood and manufactures, \$43,838; sugar, \$24,359,385. The



SECRETARY TAFT'S PARTY ON BOARD THE "MANCHURIA."

(Secretary Taft in center of the second row, Miss Alice Roosevelt in center of first row; Mr. W. J. Johnston, publisher of *AMERICAN EXPORTER*, in the rear on extreme left, just behind first lady in back row.)

principal imports were breadstuffs, of which \$1,512,311 came from the mainland. Cotton and its manufactures were second, \$1,020,428 from the mainland. In fact, the mainland controls the trade in all lines excepting chemicals and drugs, fibers and manufactures, India rubber, rice, silk, wines and vegetables. Japan's trade with Hawaii is second to that of the mainland, the value of imports from that country in 1904 being \$1,205,055.

Products and Markets.

Raw sugar is the principal product, its export value in 1904 having been \$24,359,383. This is the output of some sixty estates. About \$100,000,000 are invested in the sugar interests, which last year employed approximately 45,000 men. Owing to the absence of fuel and mineral wealth, the islands being entirely volcanic, there are no manufactures other than the perfection of certain grades of sugar, and of the machinery used in the local industry. Of mining there is none.

The Honolulu Iron Works has a capacity to produce the largest of modern sugar mills, has an extensive foundry and boiler shop, and is equipped with up-to-date machinery in every sense of the word.

The sugar of Hawaii is sold in New York and San Francisco, the canned pineapples and other preserved fruits in the same cities, while all fresh fruits and much of the remaining output goes to San Francisco.

Transportation Facilities.

Two lines of inter-island steamers maintain express service between Honolulu and the islands to the north and south. The vessels are modern and of good size, and the passages are easy. the longest run being twenty-four hours from Honolulu to Hilo and Honuapo. Every island has comfortable hotels.

The roads, in the main, are good, those most traveled having macadam surface which makes riding, driving or automobiling a pleasure. Supplies for automobiles are kept in all principal towns.

There are twenty miles of electric street car lines in Honolulu. The hack service everywhere is ample, the fares being 25 cents per passenger per mile. The livery stables are amply equipped and



OUTLINE MAP OF THE HAWAIIAN ISLANDS.

coaches bearing up to twenty-four passengers are available for parties at reasonable rates.

Four railways are in operation, with two others projected and under charter, one electric street railway system, and electric light and telephone companies on all the islands. At some points water-power is used to generate electricity, as at Hilo. The longest railroad is seventy miles, extending from Honolulu, the capital, to the extreme northern point of the island of Oahu.

The Hilo railway runs from that city to a point within nine miles of the Volcano of Kilanea. The Hawaii railroad connects Kohala plantations with the seaport of Mahukona. The Kahului railroad runs from that port to various plantations on Maui.

There are good roads throughout the archipelago. Every modern means of conveyance may be had. Automobiles are in use both in the city and country districts.

Steamer Lines.

Steamer lines touch Honolulu, from the ports of San Francisco and Vancouver on the west shore of the Pacific, from the



A GROUP OF DISTINGUISHED LEGISLATORS ON THE "MANCHURIA."

(From left to right: Senator Dubois, Idaho; Representative Payne, New York; Senator Newlands, Nevada; Senator Patterson, Colorado; Representative De Armond, Missouri; Representative Sherley, Kentucky; Representative Grosvenor, Ohio; Senator Warren, Wyoming; Senator Foster, Louisiana; Representative Hill, Connecticut; Representative Longworth, Ohio; Representative Cooper, Wisconsin.)

Philippines, Chinese and Japanese ports, and from Australia by way of Fiji and Samoa in the South Seas. The Pacific Mail and Oceanic Steamship Companies dispatch steamers at an average of once each week from San Francisco, while the Canadian-Australian steamship line, a connection of the Canadian-Pacific Railway, has a sailing once a month from Vancouver. There are a number of lines of sailing vessels, chief among them being the lines of the John D. Spreckels & Bros. Co., Williams, Dimond & Co., and Welch & Co., all of San Francisco. The rate of fare by steamer, first class, from Pacific Coast ports is \$75 one way, \$135 round trip; or \$110 each, round trip, for a party of fifteen. Second class passage is \$50 one way, while by sailing vessel the rate is \$40 one way.

The outlook for the entire Territory is good. Sugar prices have advanced materially. The building of the Panama Canal should make Honolulu the Colombo of the Pacific, as vessels from the Atlantic would find here the nearest port for reporting or taking orders for charter.

Russian Electrical Exhibition.—An electro-technical exhibition will be held at Keiv, Russia, in the spring of 1906. The announcement is made that the Ministry of Finance will permit the importation of the latest appliances and inventions in the realm of electro-technical science for purposes of exhibit under the following rules: (1) The exhibition committee must deposit security to the amount of customs duty according to the tariff, which will be returned when the goods are re-exported, which must take place not later than three months after the closing of the exhibition; (2) the goods are to be exported by way of the same custom-house through which they entered Russia.

THE PHILIPPINES AS A MARKET FOR AMERICAN GOODS.

(Special Staff Correspondence.)

Under the Spanish régime, the value of the export trade of the Philippine Islands considerably exceeded that of the import trade. Since American domination, the imports into the islands have nearly doubled; while the exports have also increased, they have not kept pace with the growth in the imports. As will be seen from the accompanying table, however, taken from the latest official records, the balance of trade is rapidly diminishing.

The imports are now about \$30,000,000 annually, not including coin movement or United States Government supplies. Of these, \$3,755,300, or 13 per cent., are of United States origin. China (not including Hong Kong) also supplies about 13 per cent.; the French East Indies, 15 per cent.; Great Britain, 17 per cent.; the British East Indies, 8 per cent.; Spain, 7 per cent.; Germany, 6 per cent.; France, 4 per cent.; Hong Kong, 5 per cent.; Japan, 3 per cent.; while other countries aggregate 9 per cent.

The participation of the United States in the import trade of the islands during the Spanish decade was so slight, with the exception of the items of mineral oils and wheat flour, as to make her export trade to the Philippines—aside from these commodities—practically date from the period of American occupation. The greatest triumph in American trade extension since the advent of the national flag is to be found in imports of iron and steel and their manufactures, which in the record imports of these wares in 1904 are nearly half of American origin, and constitute a fifth of the five-million-dollar trade of the United States for the year.

In lumber, furniture and other wood manufactures the United States also takes a prominent place. This is true as well of brass and copper manufactures; plated wares, scientific and electrical instruments, and leather and its manufactures. School books are quite naturally a conspicuously American trade of considerable proportions, in view of the energetic extension of education and the American teacher's prominence in the work. This list might be considerably increased to the same purpose, but enough has been said in view of the American place in the import trade of the islands in Spanish times to demonstrate substantially that American trade has followed the flag into these new Oriental dominions.

It is true that there are yet large fields in the islands' trade in which the United States has thus far figured only slightly or not at all; but without entering upon the consideration of these neglected opportunities of the American exporter and the causes for such neglect in a sphere so peculiarly American, the growth of United States trade in the islands as already indicated is gratifying—especially in view of the conditions under which it has taken place. Imports of Spanish origin in 1894, though of but slightly greater value than those of the United States in 1904, were the result of trade relations extending over a long period, and aided by the further stimulus of virtual free trade with Spain. On the other hand, American enterprise has, within a relatively brief period, borne considerable fruit in a new field where it has enjoyed no tariff favors and has had to win its way in the face of the established trade of older countries. With such a past record the American exporter will doubtless continue to make gains in the course of the four years which must pass before the lapse of the restrictions imposed under the Treaty of Paris, and

present achievements give promise of the importance that this Oriental market will assume to American trade from 1909, when commercial relations can be made the subject of special adjustment mutually advantageous to the two countries.

The tables which follow are taken from the December number of the *Summary of Philippine commerce*, the most important issue of that carefully compiled publication. These tables are reproduced for the purpose of showing the rapid strides which have been made, and to indicate the character of goods most in demand in that part of the world. The scope of the *AMERICAN EXPORTER*, of course, precludes the publication of the statistics in full.

Import and Export Trade of the Philippine Islands, Calendar Years 1900-1904.

(Coin movement and U. S. Government supplies are not included in these figures.)

CALENDAR YEAR.	Imports.	Exports.	Excess of Imports over Exports.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	24,863,779	22,990,373	1,873,406
1901.....	30,162,471	24,503,353	5,659,118
1902.....	33,342,166	28,671,904	4,670,262
1903.....	33,811,384	32,396,746	1,414,638
1904.....	29,577,731	29,149,500	428,231
<i>Average annual.....</i>	<i>30,351,506</i>	<i>27,542,375</i>	<i>2,809,131</i>

Merchandise Imported into the Philippine Islands—Partial List.

	Twelve Months Ending December,		
	1902.	1903.	1904.
Agricultural implements.....	\$22,628	\$22,058	\$39,959
Books, music, maps, engraving and other printed matter	99,344	159,265	301,041
Brass and manufactures.....	113,966	149,111	166,676
Cars, carriages, other vehicles and parts..	118,349	125,577	86,587
Celluloid and manufactures.....	35,677	52,242	41,969
Cement	64,704	76,657	206,681
Clocks, watches and parts.....	158,745	86,104	64,529
Copper and manufactures.....	173,574	152,943	184,289
Cotton and manufactures.....	7,645,449	5,068,788	5,549,684
Earthen, stone and china ware.....	174,962	104,290	91,549
Glass and glassware.....	251,635	270,696	147,147
Instruments and apparatus for scientific purposes, telegraph, telephone and other electrical	76,646	49,088	52,394
Incandescent electric lamps.....	8,182	6,925	6,364
Iron and steel and manufactures of—			
Structural iron and steel.....	35,454	71,108	110,495
Wire and wire cables.....	21,844	19,920	36,870
Builders' hardware, saws and tools, locks, hinges, etc.....	47,033	20,096	12,284
Saws	8,104	5,197	4,339
Tools not elsewhere specified.....	109,072	81,824	128,355
Castings not elsewhere specified.....	23,566	21,912	26,328
Cutlery	68,067	79,508	52,608
Firearms	5,783	25,713	58,220
Machinery, machines and parts of—			
Electrical machinery	3,530	15,560	19,439
Pumps and pump machinery.....	17,184	19,013	35,241
Sewing machines and parts.....	126,166	142,851	59,805
Steam engines and parts.....	96,059	96,941	144,033
Typewriter machines	25,953	25,693	50,667
Sugar and brandy machinery.....	1,330	13,028	10,346
Other machinery and apparatus.....	237,275	232,277	290,785
Detached parts of other machinery and machines	95,539	76,912	130,016
Pipes and fittings.....	38,838	54,246	121,918
Scales and balances.....	12,879	16,866	11,972
Stoves, ranges and parts.....	7,488	9,696	6,939
Other manufactures of iron and steel....	471,465	373,352	452,402
Jewelry and manufactures of gold and silver—			
Jewelry	165,511	302,909	128,461
All other manufactures of gold and silver	52,292	29,367	14,917
Lead and manufactures.....	16,986	22,119	27,956
Leather and manufactures of—			
Boots and shoes.....	468,150	464,354	286,335
Harness and saddles.....	13,944	19,402	12,473
Trunks, valises and traveling bags..	7,013	6,009	3,103
All other	58,172	44,241	34,680
Matches	48,517	127,148	75,046
Metal and metal compositions.....	77,294	54,100	61,079
Musical instruments—			
Pianofortes	18,544	23,405	14,902
Oil cloths	33,337	27,762	23,469
Paints, pigments and colors.....	153,899	142,718	164,144
Paraffin and wax.....	138,351	99,406	74,272
Perfumery and cosmetics.....	104,668	82,717	59,003
Plated ware	73,570	77,637	50,310
Rubber and manufactures.....	124,654	92,512	105,764
Soap	44,306	31,430	36,297
Varnish	11,087	13,187	17,825
Wood and manufactures of—			
Furniture	82,216	85,466	62,285

Exports from the Philippine Islands, by Countries, 1900-1904.—(Coin movement not included)

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	France.	Spain.	China.	Hong-kong.	Japan.	British East Indies.	Australasia.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	2,960,851	8,105,220	126,729	2,533,607	1,566,972	238,827	3,870,994	794,453	1,009,388	621,892	1,161,440	22,990,373
1901.....	4,546,292	11,126,226	81,432	1,323,513	1,263,150	118,003	2,924,974	1,584,218	728,163	621,200	186,182	24,503,353
1902.....	11,475,948	8,017,526	99,791	2,315,788	749,829	675,974	3,000,266	708,345	816,244	285,682	526,511	28,671,904
1903.....	13,071,426	9,464,630	309,033	3,094,211	860,575	438,668	1,854,608	1,628,889	662,698	395,614	616,394	32,396,746
1904.....	11,654,968	9,035,479	134,769	1,588,851	1,164,448	862,531	2,209,562	821,978	644,267	465,396	567,251	29,149,500
<i>Average annual...</i>	<i>8,741,897</i>	<i>9,149,816</i>	<i>150,351</i>	<i>2,171,194</i>	<i>1,120,995</i>	<i>466,801</i>	<i>2,772,081</i>	<i>1,107,576</i>	<i>772,152</i>	<i>477,957</i>	<i>611,555</i>	<i>27,542,375</i>
<i>Per cent.....</i>	<i>32</i>	<i>33</i>	<i>1</i>	<i>8</i>	<i>4</i>	<i>2</i>	<i>10</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>.....</i>

Imports into the Philippine Islands, by Countries, Calendar Years 1900-1904.
 (Coin movement and U. S. Government supplies are not included in these figures.)

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	France.	Spain.	China.	Hong-kong.	Japan.	British East Indies.	French East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	2,153,198	5,576,931	1,631,816	978,095	1,989,235	3,127,569	4,610,913	441,319	1,745,124	760,084	1,849,495	24,863,779
1901.....	3,534,255	5,692,579	2,205,695	1,907,074	1,934,251	3,884,966	1,165,738	1,061,131	3,384,065	2,359,039	3,033,678	30,162,471
1902.....	4,153,174	5,639,274	2,262,039	1,204,727	2,917,546	4,938,185	1,531,358	726,637	1,668,326	5,575,199	2,725,701	33,342,166
1903.....	3,837,100	4,619,133	1,761,996	1,292,154	2,045,965	4,628,431	510,042	811,737	2,715,524	8,168,721	3,420,581	33,811,384
1904.....	5,098,820	4,341,024	1,454,822	853,176	2,002,853	3,093,082	308,417	835,012	2,107,698	6,375,522	3,107,305	29,577,731
<i>Average annual...</i>	<i>3,755,309</i>	<i>5,173,788</i>	<i>1,863,274</i>	<i>1,247,045</i>	<i>2,177,970</i>	<i>3,934,447</i>	<i>1,625,294</i>	<i>775,167</i>	<i>2,324,147</i>	<i>4,647,713</i>	<i>2,827,352</i>	<i>30,351,506</i>
<i>Per cent.....</i>	<i>13</i>	<i>17</i>	<i>6</i>	<i>4</i>	<i>7</i>	<i>13</i>	<i>5</i>	<i>3</i>	<i>8</i>	<i>15</i>	<i>9</i>	<i>.....</i>

Cotton and Cotton Manufactures.

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	Spain.	Switzerland.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	99,594	4,188,773	582,850	1,233,590	572,458	107,896	764,970	697,188	535,757	8,783,076
1901.....	116,335	3,480,279	635,718	804,094	549,311	211,433	6,054	683,458	623,637	7,110,319
1902.....	385,730	3,416,966	693,196	1,108,591	443,950	168,764	100,553	392,599	535,080	7,245,429
1903.....	346,009	2,585,605	324,165	630,476	287,228	95,992	7,753	309,500	482,060	5,068,788
1904.....	442,083	2,556,888	298,173	891,189	365,303	224,428	10,506	329,814	461,298	5,579,682
<i>Average annual....</i>	<i>277,950</i>	<i>3,245,702</i>	<i>506,820</i>	<i>933,588</i>	<i>423,650</i>	<i>161,703</i>	<i>177,967</i>	<i>482,512</i>	<i>527,566</i>	<i>6,757,458</i>

Jewelry and Manufactures of Gold and Silver.

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	France.	Spain.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	7,458	5,104	5,456	165,382	275	1,069	8,120	6,358	11,931	211,153
1901.....	18,378	4,374	20,537	612,512	2,342	5,947	2,040	10,432	19,308	695,870
1902.....	14,320	1,513	22,087	149,046	918	2,841	7,760	9,816	9,502	217,803
1903.....	11,825	314	13,132	291,047	1,322	1,922	2,518	4,200	6,005	332,276
1904.....	8,594	1,530	24,699	102,024	208	1,159	2,321	457	2,416	143,408
<i>Average annual....</i>	<i>12,115</i>	<i>2,567</i>	<i>17,180</i>	<i>264,002</i>	<i>1,013</i>	<i>2,588</i>	<i>4,552</i>	<i>6,253</i>	<i>9,832</i>	<i>320,102</i>

Iron and Steel and Their Manufactures.

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	France.	Spain.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	175,543	673,734	250,944	134,796	23,100	8,322	111,651	41,737	67,859	1,487,686
1901.....	609,533	739,535	427,358	257,922	16,195	41,634	11,351	276,965	83,069	2,463,562
1902.....	534,010	811,471	433,280	99,680	29,789	21,487	57,933	33,535	119,271	2,140,456
1903.....	557,327	822,104	491,748	142,778	18,262	25,761	43,612	16,537	152,548	2,270,647
1904.....	1,100,482	744,329	304,093	104,315	23,729	32,608	44,356	21,874	92,316	2,468,102
<i>Average annual....</i>	<i>595,379</i>	<i>758,235</i>	<i>381,485</i>	<i>147,896</i>	<i>22,215</i>	<i>25,962</i>	<i>53,781</i>	<i>78,124</i>	<i>103,013</i>	<i>2,166,090</i>

Glass and Earthen Ware, Earth and Stone.

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	Spain.	Belgium.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	202,896	38,191	65,068	24,137	19,652	22,958	86,951	19,931	64,903	544,687
1901.....	318,460	118,146	155,245	46,703	28,718	85,013	26,048	27,853	81,690	887,876
1902.....	55,093	83,494	140,612	39,651	33,621	58,030	40,435	6,160	83,534	540,630
1903.....	33,948	99,672	123,903	40,060	16,295	57,016	34,581	3,347	79,025	487,847
1904.....	42,190	64,710	86,787	20,498	26,224	169,305	22,612	3,851	50,829	487,006
<i>Average annual....</i>	<i>130,518</i>	<i>80,845</i>	<i>114,323</i>	<i>34,210</i>	<i>24,902</i>	<i>78,464</i>	<i>42,125</i>	<i>12,228</i>	<i>71,996</i>	<i>589,609</i>

Paper and Paper Manufactures.

CALENDAR YEAR.	United States.	United Kingdom.	Germany.	France.	Spain.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	62,764	16,049	84,168	73,421	103,855	19,408	24,407	3,156	75,877	463,105
1901.....	299,541	23,385	103,911	75,614	143,212	42,138	1,951	5,985	82,856	778,593
1902.....	172,793	24,882	61,760	85,845	138,063	46,881	7,338	8,050	67,287	612,899
1903.....	146,668	33,089	57,868	123,151	130,478	43,608	4,290	1,972	66,534	607,658
1904.....	309,130	37,104	70,427	97,674	166,231	34,179	13,342	3,982	80,103	812,172
<i>Average annual....</i>	<i>198,179</i>	<i>26,902</i>	<i>75,627</i>	<i>91,141</i>	<i>136,368</i>	<i>37,243</i>	<i>10,265</i>	<i>4,629</i>	<i>74,531</i>	<i>654,885</i>

Wood and Wood Manufactures.

CALENDAR YEAR	United States	United Kingdom.	Germany.	France.	Spain.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	10,692	8,557	56,171	11,042	16,198	8,604	36,030	43,568	32,642	223,504
1901.....	81,716	14,905	86,237	23,556	14,614	41,643	14,932	123,917	131,052	532,572
1902.....	230,803	14,860	65,135	13,350	18,696	21,459	20,743	49,061	40,131	474,238
1903.....	225,704	8,406	83,172	16,415	15,856	23,333	14,900	28,316	123,608	539,710
1904.....	310,197	3,763	52,157	7,729	4,933	22,605	10,919	24,194	187,321	623,818
<i>Average annual....</i>	<i>171,823</i>	<i>10,098</i>	<i>68,574</i>	<i>14,418</i>	<i>14,059</i>	<i>23,529</i>	<i>19,505</i>	<i>53,811</i>	<i>102,951</i>	<i>478,768</i>

Oils.

CALENDAR YEAR.	United States.	United Kingdom.	Spain.	Russia.	China.	Hongkong.	British East Indies.	Other Countries.	Total.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1900.....	12,003	58,528	2,005	255,912	5,830	71,609	16,066	7,258	429,211
1901.....	124,342	10,587	40,662	281,619	61,237	10,589	14,423	15,856	559,315
1902.....	326,999	34,189	4,639	191,341	58,074	11,174	58,025	66,555	750,996
1903.....	331,543	8,152	912	256,518	31,792	3,377	5,909	46,567	684,770
1904.....	423,950	20,099	368	350,458	33,293	1,922	8,582	33,388	872,060
<i>Average annual.....</i>	<i>243,767</i>	<i>26,311</i>	<i>9,717</i>	<i>267,170</i>	<i>38,045</i>	<i>19,734</i>	<i>20,601</i>	<i>33,925</i>	<i>659,270</i>

THE "MANCHURIA'S" CARGO.

Special Agent Henry R. Burrill, who is now in China, furnishes interesting facts regarding the cargo of the steamship *Manchuria*, on which vessel Secretary Taft's party sailed from San Francisco. His letter is published in *Consular Reports*.

"The *Manchuria* carried on this voyage a total of 76,008 packages divided as follows:

Cotton	2,576
Domestics	10,616
Canned goods	12,932
Leather	2,485
Flour	30,186
Hams and bacon	2,024
Bottled beer	1,250
General merchandise	13,989

Total 76,008

"The value of the foregoing is placed at \$113,816.50. This is an unusually light cargo. The cotton is put up in bales, domestics in bales, trusses and cases, canned goods in cases, leather in rolls, bales and cases, flour in one-fourth barrel sacks, ham and bacon in cases, and bottled beer in barrels. The raw cotton is consigned to Japan and the domestics to Shanghai, for distribution in northern China. About 30,000 sacks of flour are for Hongkong and the rest of the cargo is for various ports. This line frequently carries consignments of pig lead for Shanghai. This is made up into lead boxes for the exportation of tea. There are now 20 cases of sheet lead on board for Shanghai, which will also be made up into tea boxes."

PARCELS-POST AGREEMENT.

A parcels-post regulation between Australia and the United States went into effect August 1, 1905, "Parcels-Post packages for destinations in Australia will be admitted to the mails for Australia made up in and dispatched from this country. 'Parcels' exchanged between the United States and Australia must not exceed \$50 in value, weigh more than four (4) pounds six (6) ounces (or 2 kilograms), nor measure more than three (3) feet six (6) inches in length, and six (6) feet in length and girth combined. Postage must be prepaid in full at the following rates, viz.: In the United States, on parcels for Australia, 12 cents for each pound; and, in Australia, on a parcel for the United States not exceeding one pound States, on parcels for Australia, 12 cents for each pound, or fraction of a pound; and, in Australia, on a parcel of the United States not exceeding one pound in weight, one shilling; and for each additional pound, or fraction of a pound, sixpence."

Drifted Across the Pacific.—The total absence of trade or other winds on a 14,000-mile voyage was the unusual experience reported by Captain Goodwin, of the ship *Dirigo*, upon his arrival at Philadelphia, Pa., after a 156-day trip from Hawaii. The *Dirigo* is one of fastest clipper ships afloat, and during her last trip there were several days when the boat made but fifty miles during the twenty-four hours. The weather on the Atlantic, as well as the Pacific, was calm and sultry, and the craft was almost constantly deluged with rain. She brought a cargo of sugar.

NOVELTIES IN AMERICAN FURNITURE.

MANY INGENUOUS DESIGNS THE PRODUCT OF AMERICAN INDUSTRY.



THE manufacture of furniture is one of the most important industries of this country. Although now it comprises a very extensive item of our exports, the field is constantly enlarging and the furniture of the United States is winning popularity everywhere. Because of the improved methods of this country and the development of machinery, the product of the American cabinet-maker has forced its way in all directions. The barriers of prejudice have been overcome, and there is hardly a country in the world where the American furniture has not found its way.

The total amount of furniture sent abroad for the twelve months ending June of this year amounted to \$4,439,944. Our neighbors to the north seem to have the greatest liking for American furniture, British North America taking our products in this line to the extent of \$717,982, the United Kingdom coming second with \$651,325, followed by Mexico, which took \$647,475 worth. The other countries showing appreciation for our furniture are: Cuba, \$567,809; British Africa, \$307,965; Argentina, \$299,471; British Australasia \$232,652. The Mexican demand has shown a very notable increase in the last three years, likewise, quite naturally, that of Cuba. Japan's draught on this market shows a decline, in all probability due to the disturbed conditions existing there. The demand from Chile is not so great, but shows a large increase during the past three years, climbing to \$38,953 for the year ending June last from \$21,647 for the corresponding term of the previous year, and \$17,102 for the year ending June, 1903. The amount sent to British Honduras makes even a better showing, climbing from \$37,251 in 1903 to \$65,714 in 1904 and \$160,526 in 1905.

FURNITURE FOR THE HOUSEHOLD.

The variety of the furniture product of this country makes it available for use almost anywhere, and this is in a measure responsible for the growing export trade. Our combination pieces, such as combine the couch and bed, for instance, are largely sought in foreign markets, as well as the wicker, grass and willow ware.

Improvements in Beds and Couches.

In the matter of the folding bed, the present concern of the designer and manufacturer is in the direction of simplicity. These extremely useful pieces are now recognized as a great convenience, if not an essential, about the home of moderate proportions. The capacity of any domestic establishment, except that of the very wealthy, who can maintain suites of guest chambers, is likely to be overtaxed, and in such instances the folding bed comes to the rescue of the host.

The attempt is no longer made to any great extent to disguise the function of such a piece at times when it may not be employed as a bed. Years ago the designer and manufacturer had only this deceit in mind, and everything was sacrificed to

that end. So, upon entering the house of a friend and seeing something in the way of a piece of furniture with any marked characteristics, we could immediately conclude that it was a folding bed. The designers and inventors allowed themselves to go to the fullest extent in this respect. What appeared to be a somewhat awkward bookcase, with volume after volume of spick-and-span new books arranged in offensive regularity, would be found upon investigation to be a folding bedstead, and the books mere shams. A sideboard of massive proportions with jars and vases on its many little shelves would be found to unbuckle and turn into a bed at the touch of the housewife, the bric-à-brac being fastened in place to dispense with the necessity of removing it each time it was necessary to tilt the article with the view of offering a resting place for the weary.

To such an extent was this idea carried out that furniture of this description became positively ludicrous to behold. The disguise was such a thin one that the very object for which it was intended was defeated, and only served to attract attention to the deception. The batteries of the humorists of the world were directed on the atrocity, with the result that the folding bed under the guise of a sideboard, or other piece, was laughed out of existence.

The comforts and convenience of the folding bed had, however, become manifest, and it was soon extensively manufactured without its gim-crack attachments. These can be purchased in large variety, but as a type there is shown herewith the "foldable bed" of the Standard Metal Furniture Company, of Detroit, Mich. The bed consists of three parts, which are hinged at two

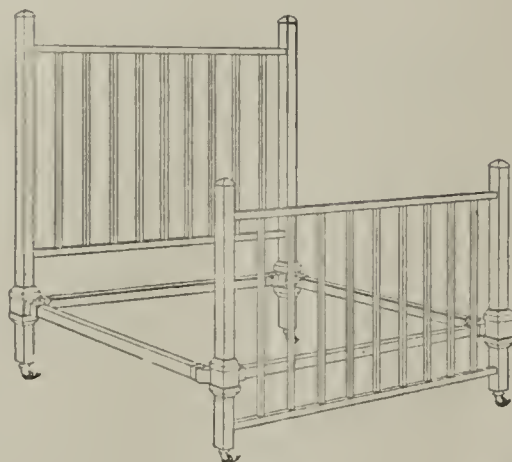


FOLDABLE BED.

corners. For folding, one side of the mattress-holding frame is raised back to the wall, and then the head and foot sections are folded in and against it so that a space only twelve inches wide is occupied by the bed. If it is desired to conceal this, it can be readily done with a piece of curtain material deftly

draped. This folding operation may be done after the bed has been made, so that when the occupant of the room desires to place himself in the soothing influence of Morpheus the bed is in readiness in a few seconds.

The American brass bedstead is in demand all over the world, despite the fact that there seems to be no general effort made on the part of the manufacturers of this country to push their products in the foreign markets. The brass bedsteads of the United States go largely to all the tropical countries. There is a strong demand from China for these articles, and in the Celestial Empire, the selling prices are far beyond those which are asked at home. The plainest kind of a metal bedstead, which will sell for about \$7 in this country, will bring more than double that amount in China, and in cases where the springs go along with the bed in America, the Chinese merchant will make an extra charge for these. In a recent report on this subject, made by United States Consul George Anderson, at Amoy, China, it is stated that "The trade in American metal beds is rapidly increasing in China, as the European beds are hardly in the same class for comfort or beauty, prices considered. The higher-class Chinese are taking to foreign furniture generally and to foreign spring beds with the rest. Like other branches of trade, to make it what it ought to be there must be special study of the requirements. A large number of lightweight, cheap spring beds ought to be sold in China in the next few years. Beds of unusually great width are popular, owing to the hot climate."



BRASS BEDSTEAD ON MISSION LINES.

The brass bedstead is made by the manufacturers in a great many designs to suit all kinds of tastes. Some of them are ornate to the fullest extent, and involve in their design bright-colored glass and agate knobs and scrolls of brass and other metal. For ordinary domestic use the plainer designs seem to be in demand. Rods of plain tubing with swell head and foot portions seem to be the extent of the departure demanded

generally in the direction of decorative effects. One of the latest designs in this direction is so severely plain that it is called the "Mission." Such a bedstead is shown in the accompanying cut, and is the product of Oliver Brothers, of Lockport, N. Y. The rods in this particular case are square, and all of the corners are the same, and the appearance is that of a handsome piece of furniture.

The export figures show that the American folding bed and couch are growing in favor abroad and that a great number of pieces of this character are annually passed through our ports for use in Europe, South America and Africa. A great deal of ingenuity has been exercised in the design of these articles of furniture, with the view of securing the greatest utility with a minimum of material in their construction and space occupied when in a collapsed condition. A great variety of such pieces is made by the United States Spring Bed Company, of Springfield, Mass., and one of the very latest novelties in this line presented is what is called the Brightwood, which answers a

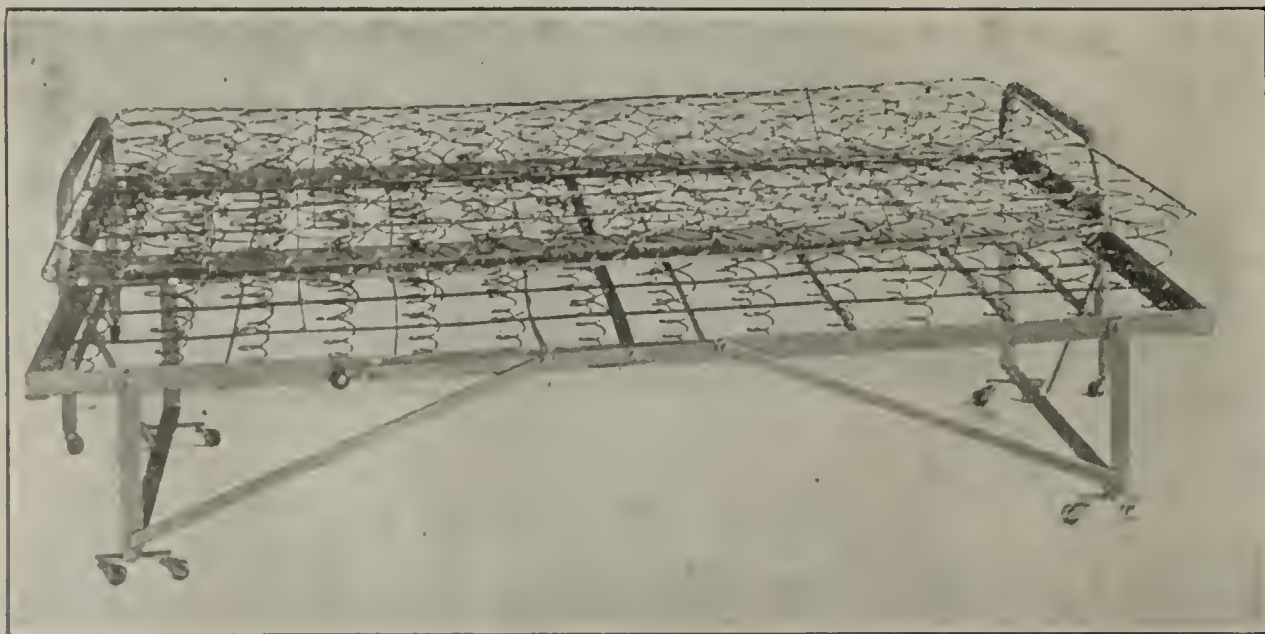


EUREKA COUCH BED, SHOWING WORKING PARTS.

number of purposes in that it may be used as a double or single bed or as a couch. The makers also claim as advantage, that it is fitted with a spiral spring, which is somewhat of a novelty in articles of this kind.

When used as a divan the lower or movable half slides under the main section, entirely out of the way. Used as a bed, the lower part is drawn out to a stop, and the lever in front thrown over the opposite side; this forces the folding legs down and raises the under spring to an exact level with the one on the main section, making a bed of full size and perfectly even top. The lever locks in place, rendering the legs rigid and secure.

By drawing out the lower half to the limit, and then raising one leg of the main section over the small lug on the inside lower corner of the movable part, the couch-bed is immediately separated into two single



THE BRIGHTWOOD AS A SPIRAL SPRING BED.

couches, the lower spring being raised after the separation. By reversing the process the two are again locked together.

The Eureka couch bed, made by the same company, is also quite a novelty, but is built on somewhat different lines and is without the separable feature mentioned above. This bed is expanded by raising a leaf on each side. When closed, it stands on the legs, formed by the tubing ends, which go straight to the floor, obviating the usual extended foot at the corners. When the sides are lifted, extra sets of legs are automatically thrown out nearly to the edge of the couch, making a perfect support.

It may be closed up after use by the mere pressure of the foot on a pedal at a convenient place on the end. A very slight pressure is sufficient to disturb the mechanism by which the leaves are locked in place and allow the sides to fall.

A combination Davenport and bed, which, when used in the former capacity, has none of the earmarks of the combination



piece, is that of the D. T. Owen Company, of Cleveland, O. The manufacturer of this says that in it has been combined a bed of full size with a low-back Davenport, the latter having a frame of almost any desired design. There is nothing to indicate the bed combination. The change is made with very little effort. The seat lowers out of the way and the bed is unfolded, with mattress and springs for sleeping purposes quite separate from those which are in use, when arranged as a Davenport. The bed has been made in the morning and is ready for use upon being extended. The bed, which is concealed in the back, is entirely independent of the Davenport, does not even rest on the upholstering of the seat, but is supported by independent legs, which automatically fold with the head and foot rails. One of the advantages of this arrangement is that the upholstering of the couch will remain in good condition for a much longer time. The fabric is subjected to very hard wear when it also takes the place of a mattress.

The subject of the ventilation of bedding is an important one, and it is claimed that this matter is carefully looked after in the Owen, as the bedding is at all times exposed to the air when not in actual use.

A steel Davenport, the design of which cleverly conceals its primary purpose, that of a bed, is made by the Geneva Furniture Manufacturing Company, of Geneva, New York. The bed portion is hinged through the center so that, as a couch, part of the mattress acts as the back, while the other part is the seat. When it is desired to make use of the piece as a bed, the seat is drawn forward until the back reaches the center of the supporting frame, when the back is dropped, and in this manner the couch is transformed into a full-sized bed.

Where the couch covering is of some handsome material, it is sometimes desirable to make use of additional bedding, which

is not only of the nature of a protection, but also makes a more comfortable bed. In this case provision is made for the storage of such extra bedding on a metal shelf under the couch.

Library Conveniences.

In many homes a center or library table is generally pressed into service as a desk, and very poorly does it answer this purpose. The ink and writing paraphernalia must be pulled out from some corner and a space cleared on the top of the table, which is generally more or less generously covered with books and papers. All things having been gotten in readiness at last, the table is found to make a very indifferent desk. Quite likely during the operation of writing the ink bottle will become upset and serious damage done to table and floor covering.

A very neat combination piece of furniture which embraces the functions of a desk and table has been recently designed and placed on the market by the Niagara Desk Table Company, of Buffalo, N. Y. To all intents and purposes the thing is a table with-



TABLE DESK—CLOSED.

out anything in its construction to indicate its double use. The desk is contained in the drawer. This being drawn out reveals a slanting top of a convenient height with a safety ink well in the corner. The ink from this cannot be spilled when closed, so that no accidents to the table can be responsible for scattering the ink when the desk drawer is out of use. The desk top is hinged, and being raised, offers a place in the drawer for storage of paper, pens, blotters and similar desk appurtenances.

One of the most notable features of this combination is the fact that the desk can be made use of without disturbing anything which happens to be on top of the table.

Another improvement of the same kind has a folding top, which, while not possessed of some of the conveniences of the table referred to above,

is supplied with an extremely clever arrangement by which the desk top appears like magic as the two halves of the table are turned back. As the wings are moved up and back the desk is made to follow by means of a set of brass rods. These sink into the woodwork when the opening operation has been completed.

A combination desk and table on



TABLE DESK IN USE.



COMBINED DESK OR TABLE.

Mission lines is the product of the Cadillac Cabinet Company, a cut of which is herewith reproduced. There are four places where a desk table is a practical necessity, and one where it is almost indispensable. The four are the hotel, the office, the apartment and the dormitory, and the one is the home. These are the places most of us live in. In the hotel bedroom and writing-room the desk table is a public benefactor. The statement is made that this is not the addition of one article to another, but a perfect combination. Besides the Mission design the desks are also made in mahogany, maple and birch.

Music Cabinets and Record Holders.

To a very considerable extent this country is looked to by the world for striking things in the line of music cabinets, phonographic record racks and similar pieces of furniture. Special attention is given to this line by the Herzog Art Furniture Company, of Saginaw, Mich., and several of the most recent novelties put out by this concern are shown herewith. The particular specialty at present is the "Dandy" cabinet, which is shown opened and closed. Instead of bothersome doors in the front which greatly restrict one's explorations into the interior, this cabinet is built in three parts, two of them swinging open on pivots, the effect of which is practically to turn the thing inside



FOR DISK RECORDS.

out. The swinging parts are equipped with pockets, one above the other, in which sheet music may be stored and arranged in groups so that any particular piece may be readily secured with the least trouble. When closed the cabinet presents a beautiful appearance, the polished surfaces being unbroken and unmarred by hinges and openings in the wood.

This cabinet is also shown fitted with vertical racks for the accommodation of diaphragm records, an individual compartment being designed for each record. For cylindrical records an arrangement of drawers is made by this company with stands to hold each record. The drawers, when drawn out to their fullest extent, drop to an angle which is quite convenient for the removal and replacing of the records.

The export business of this company is so large that it was found necessary to make use of the best "knock-down" method that could be found in making foreign shipments. Accordingly a special system was devised which is made use of in all the fur-

niture manufactured by this company. It is particularly adapted to desks and tables. Legs and similar parts are fitted into place and held there by a thumb nut, and the construction is strength-



OPENS LIKE A BOOK.

ened by a diagonal bracing of wire which makes the piece very rigid and strong when set up. In this manner eight tables with tops two feet square can be packed in a crate the size of a single table when set up.

Oscillating Furniture.

The rocking chair is an institution entirely American, but it is making its way slowly into foreign fields, introduced by some American influence. To those who have not been brought up in the rocking chair, the innovation is not always a favored one. In many cases the motion of the chair has a disturbing influence on the occupant rather than a soothing one. Various modifications have been introduced to rectify this, and the newest de-



OSCILLATING CHAIR.

sign is the oscillating furniture, made by C. A. Warner & Co., of New York. A cut of an oscillating rocker is shown herewith, but the principle is made use of in a number of different designs such as divans and conversation or vis-à-vis chairs. The motion of these pieces is back and forth, on a perfect level, rather than the combined up and down as well as back-and-forth movement of the rocker. The single chairs of this construction and some of the divans have adjustable backs so that they can be arranged for individual convenience. While most of these pieces are suited for almost any room, they are also very desirable on the porch, taking the place of hammock and swinging bench.

Conveniences in Disguise.

A great deal of ingenuity has been displayed by the furniture designer during the past few years in the matter of odd pieces for bachelors' apartments and smoking-rooms. There is a constantly growing demand for these pieces, and it seems that it is impossible for the designer to overstep himself in the struggle for the bizarre. These pieces are sought as gifts and prizes. There is always a delightful abandon about the well-kept rooms of a bachelor, and his hospitality is generally of a very hearty character. Under such circumstances guests always enjoy themselves, and having had a particularly pleasant evening they feel that they must make some substantial acknowledgment. Under the circumstances it cannot be done in a neater manner than through a present, and what could be more appropriate than a gift of something which will add to the charm of the room?

This line of furniture is given special attention by the Adler Veneer Seat Company, of Brooklyn, N. Y., which has recently added some very interesting novelties in the way of cellarettes, smoker's sets, odd chairs and similar things. One of the newest cellarettes is of fancy wood in the shape of a little box, supported on a post, in much the same manner as the mail box on the street corner. In the front, printed in close resemblance to the familiar collection schedule, is a card, which reads as follows:

8 o'clock.....Eye Opener.
9 o'clock.....Morning Salute.
12 o'clock.....Lunch Bracer.
6 o'clock.....Dinner Appetizer.
10 o'clock.....Night Cap.

The box being opened reveals accommodations for all the bottles and similar fixtures essential for the rooms of a gentleman of pronounced sporting proclivities.

Humidors combined with various conveniences are favorites with those who hesitate to countenance the suggestion boldly contained in the presence of a well-equipped cellarette. These are made in great variety, and there is generally incorporated in their construction a number of conveniences likely to be welcomed around the rooms of the smoker. The electric cigar-lighter is one of the newest features. It consists of a handle carrying a wick, with strands of metal through it. When not in actual use, this reposes in a receptacle containing alcohol, sunken in the top of the table. When the lighter is needed it is withdrawn and passed across the surface of an ornamental piece of metal work in the top of the table, and which is connected with an electric battery. This lights the wick, which burns until the alcohol is consumed.

The electric lighting feature occupies a prominent place in nearly all of the pieces for smoker's use, and is a great improvement over the alcohol lamp formerly used for this purpose, as well as being safe and economical. The presence of the burning

lamp is a constant source of danger. It is generally of some fancy design likely to be knocked, or even blown, over by a waft of air, and if the accident is not noticed at once serious damage is likely to result. Another drawback in the use of alcohol is that the supply generally runs short at the most inopportune time, in the middle of the evening, and a game of cards perhaps interrupted while the receptacle is refilled.

The night clock enters into some of the newest humidor combinations, and is a very desirable feature. It consists of a tiny clock mounted on a pedestal and directly in front is a miniature electric lamp, the current for which is supplied by a battery ingeniously disposed of in the construction of the table. At a convenient place in a corner of the table is a touch-button, which, being pressed, causes the lamp to glow upon the face of the clock.

This combination is a favorite for the reason that it appeals to a universal weakness of mankind. No one has ever been able to explain why it is that one is always consumed with a desire to know the time whenever awakened in the night. Many a valuable watch has been ruined by falling from the grasp of a sleepy man or woman endeavoring to obtain this useless information. It matters little whether it is one o'clock or four; it is evidently not time to get up, but nine persons out of ten will go to a great deal of trouble to ascertain the exact time.

Another electrical feature is the servants' call bell. The humidor enters into all of these combinations, sometimes in the shape of a box on the table top or else disposed of under the table. The lid of these devices generally has some provision for holding a damp sponge, which is the means of keeping the cigars at the proper degree of moisture. The lids of these boxes are frequently fitted out with music-box attachments, which operate as long as the lid is open.

These "sets" are generally made for the convenience of the cigar smoker, but a novelty has been added to the line in the shape of one for a pipe smoker. This is in imitation of a keg mounted on a stand at a convenient height, and upon being opened reveals a number of appliances for the man who prefers the briar to the cigar. This contains tobacco receptacle, ash tray, match box, cleaners and similar things. The keg idea is likewise made use of as a receptacle for a cigar box.

The Safe in the Home.

It is an exceedingly difficult matter to make a thing of beauty out of a safe. The latter has come to be recognized as a more or less essential part of the equipment of the house, since there are always papers to be preserved from harm as well as from curious servants and others. In addition to this it is a poor household which has not an accumulation of silver and other valu-



CELLARETTE AND SAFE.

ables of considerable proportions which it is often desired to put away securely for a few days.

"Safecraft" is a word which has been coined to describe the art of incorporating a small safe within the lines of some useful piece of furniture. This has been done in an exceedingly ingenious manner by the Herring-Hall-Marvin Company, who have brought out a number of specimens of this combination. The accompanying cut shows a cellarette, such as would be available for a bachelor's apartments or gentleman's den. The upper half is of a convenient height for the accommodation of bottles, glasses, cigars and such things, while the safe is hidden behind the doors of the lower half.

Thus the homely safe, whose presence would mar the artistic harmony of any room, is put in such a shape that no objection whatever could be raised against its presence. Heretofore the safe, for obvious reasons, was forced to some storeroom or apartment in an inaccessible part of the house, which had the result of destroying its usefulness. Jewels, for instance, removed in the boudoir are temporarily tucked away in a drawer or other convenient receptacle, to be disposed of at another time. This postponement is often fatal, for thus tempted many a servant will fall and make off with the valuables which were almost thrust into his hands.

With the safe in some disguise it forms a welcome part of the furnishing of any room. Where the wine cabinet may not be desirable the safe can be also secured in the guise of a sewing table, smoker's cabinet, bookcase, writing desk, silver chest and serving table.

Desk and Safe.

Another means of disposing of the safe is combining it with a roll-top desk, as shown in one of the accompanying illustrations, the combination the product of the Naeher Safe and Lock Company, of Cincinnati, O. The desk shown is 48 inches long, and the safe takes the place of the column of drawers which usually occupy the



DESK AND SAFE COMBINED.

lower part of the desk. The same company makes a line of small safes designed to be built into the wall. These are suitable either for office or home use. They are intended to be placed in the chimney wall, over the mantel or at the side. They may be also placed in closets which back into chimneys. After being put in place, flush with the wall, the door of the safe is covered with wall paper, in the same manner as the wall, presenting an entirely smooth surface, leaving only the joints of the door and the key-hole exposed. Any practical person can set such a safe by following the directions supplied with it, and when once in place,

cannot be removed without great difficulty, being held in place by two flanges or anchors.

Carpet Sweepers.

Nothing is much closer to the subject of furniture than carpet sweepers. The use of these implements is so general now that it is the custom in many households to maintain several sweepers scattered through the different rooms ready for use in case of emergency. The smoker carelessly drops the ashes from his cigar on the floor, upsets the ash tray, or is guilty of some other equally reprehensible proceeding, and being allowed to remain there undisturbed, the mess no doubt would mar the appearance of the carpet. For just such emergencies as this the careful housewife keeps sweepers at convenient points in different parts of the house, and by this means the rooms are kept in a constant state of cleanliness.

It is entirely natural under these circumstances that the sweeper business should develop to the point that it has reached



STEEL CARPET SWEEPER.

in the matter of variety of design and construction. While the mechanism is identical in machines of the same make, there is a great variety of designs of cases and finish for the fastidious purchaser. It is possible to secure a sweeper to harmonize with, if not match, the woodwork and the finish of almost any room.

The newest thing in this line is the Mission sweeper, brought out by the National Sweeper Company. It is made of oak with the "weathered" finish usual with the Mission furniture. It is extremely durable because of the dull finish, which can be kept in perfect condition by an occasional treatment of wax. The design of the woodwork is entirely consistent with the familiar Mission design, and the lines of the sweeper are very pleasing. The handle is held in place by the wedges used in Mission furniture, so that it is impossible for it come out of its own accord. This eliminates the greatest annoyance which the housewife is subjected to in the use of the sweeper.

The National Sweeper Company makes no less than twenty-six models, in ten different sizes, ranging from 30 inches down to the toy size for children. The large one referred to above is said to be the largest made, and is designed for use in churches, hotels and similar places. The National sweepers are all made with improved roller bearings, the rollers being cut away in such a manner that but a small part of the surface comes in contact with the other bearing surfaces, and in this manner they are said to have all the advantages of the ball bearing, with the substantial qualities of the rollers. The bother of oiling is also dis-

pensed with. The National also has a worthy feature in the brush release, permitting the easy removal of the brush for cleaning.

With the exception of the handle, the use of wood is dispensed with in the construction of the Streator Steel Carpet Sweepers. These are known as the "Sterling," and it is claimed that owing to the method of construction many advantages over other sweepers are to be found in the metal one. The case of the sweeper is made entirely of cold-drawn sheet steel, formed under dies, making a light, stiff and neat article. Another distinct novelty in this sweeper is the anti-raveler. This consists of a sheet-steel drawn cap which entirely covers the end of the brush roll and bearing, completely enclosing the ends of the roll at the bearing point. This feature overcomes the tendency of the implement to pick up and wind around the axle, strings and the like. The cap also makes it quite easy to remove the roll at any time for cleaning, but it is contended that removal is never necessary where the anti-raveler is used. The sanitary feature is regarded as one of the talking points of the sweeper, and one of the several styles manufactured by the company is known as the "Sanitaire." Being metal, and without any cracks or crevices, there is no opportunity offered for the harboring of germs and vermin.

The Bissell sweeper is an American product which carries the country's good name around the world. In order to keep up with the foreign demand the Bissell Company has an assembling department in London, and factories in Paris and in Toronto, Can. A great deal of the material is shipped from this country and put together abroad. The company makes six sizes and forty different styles, the handsomest being a rich combination of mahogany and nickel.

Mirror for Shaving.

The man who shaves himself knows the difficulty encountered in getting the mirror suspended in just the right place. It is necessary that he should have a good illumination, first on one side of the face and then on the other, and this generally necessitates the shifting of the glass from one side of the window to the other. The Ideal shaving mirror of Lovegrove & Co., of Philadelphia, Pa., is meant to overcome this by permitting the hanging of the glass at any desired point in front of the window. The cut shows the great amount of latitude permitted in the adjustment of the glass, it being mounted on an extension rod which enables the placing of the glass at any angle, and at any point necessary to secure the right light on the face.

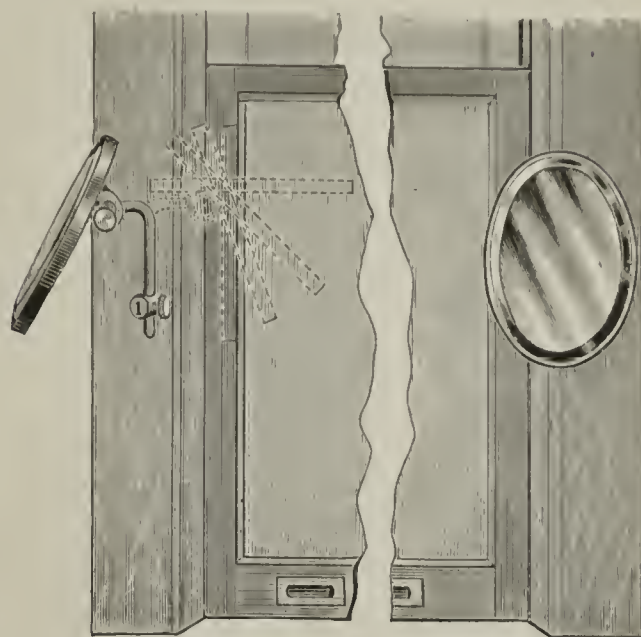


The mirror is furnished in seven-inch oval shape, and is of heavy beveled French plate glass. The screw post necessary to mount the glass is gimlet pointed, and can be readily screwed into the woodwork or plaster. When it is necessary to drive the screw into very hard wood, this can be accomplished by the use of a small rod, "a," which is supplied with the mirror and is placed in the post, "b," and used as a lever.

Natural Cotton for Felt Mattresses.

One would hardly expect to make use of a wad of cotton as an aquarium, but such an exhibition was to be seen recently in New York in the demonstration of the virtues of a quality of cotton being made use of for felt in the manufacture of felt mattresses. The Southern Cotton Oil Company, of Charlotte,

N. C., has recently embarked in the manufacture of cotton felt mattresses in addition to its other lines, and the aquarium referred to above was one of the important features of the exhibit



HOLDS GLASS AT ANY ANGLE.

at the New York Furniture Exposition. The manager had taken a section of cotton about three feet long and two wide, and of the thickness usually put into a mattress. In the center of this a hole had been cut extending half-way through to the bottom, a couple of quarts of water were poured in and two gold fish placed in this novel aquarium. Every day it was necessary to put in a little more water to replace that which had been lost by evaporation, and the fish lived here contentedly for three weeks. There was no indication of the water soaking through the fiber.

This, it was stated, was an indication of the excellent quality of the cotton. High-grade cotton in its natural condition is non-absorbent, and it is only after it has been treated, as in bleaching, that it readily takes up liquid. The bleaching is done to cater to a demand for cotton which is absolutely white. This color is not a natural one, and can be arrived at, according to the statements of the New York manager of the Southern Company, only by artificial means, and in securing the whiteness the quality of the fiber is made to suffer.

Furniture for the Camp.

An interesting line of furniture which, while primarily designed for the camp, is, in many cases, equally suitable for the household, is made by the Gold Medal Camp Furniture Manufacturing Company, of Racine Junction, Wis. The cot shown in the accompanying illustration has been adopted by the army



FURNITURE FOR THE CAMP.

and navy of the United States, and is one of many styles made by this company. Its chief claim for popularity is the fact that it is exceedingly strong when extended, and folds into any compact parcel for transportation. These are shipped in large quantities to all parts of the globe.

OFFICE FURNITURE.

The American furniture trade has developed strongly in the line of office furniture. The various systems originating in this country are now in extensive use abroad, and their vogue is still increasing rapidly. The greatest conveniences in the way of desks, cabinets and files are made in the United States, and in many instances the American companies are compelled to maintain factories abroad to look after the foreign business.

Filing Systems.

There is hardly a business of any proportions which can be successfully taken care of without the use of some filing or "follow-up" system. This classification and arrangement of the routine of office work is now quite general, and its virtues and advantages have been long recognized. In some instances an order, or even an inquiry, immediately upon its receipt, as well as all resulting communications, is copied in three, four, or sometimes as many as six cards, and these filed away in different departments or under different headings. Thus at any subsequent time it is a matter of but a few minutes for any one to become familiar with the entire history of the case; with but the slightest clue it is possible to arrive at once at prices, rates, character of communications or orders, names of representatives figuring in the matter and all such information. The Library Bureau makes a specialty of these systems. The concern has them in stock to meet all ordinary demands, but sometimes, in special cases, certain modifications are necessary, and such emergencies can be almost invariably met by the preparation of a special card for the index or some little change in the numbering or lettering of the envelopes made to receive the correspondence or other data. Among the largest users of these systems at the present time are accountants, advertisers, architects, banks, cemeteries, clubs and societies, commercial houses, electric-light, gas and water companies, hospitals, insurance companies, libraries, mail-order houses, manufacturers, municipal offices, physicians, telephone companies, trust companies and the United States Government offices. The fundamental part of the system might be said to be the card index. Drawers of suitable size contain cards strung on a wire to prevent removal and on these are made records of names, subjects or undertakings with reference to "folders," in other cabinets where the original records may be consulted. Various ingenious schemes are resorted to with the view of facilitating the consultation of these, such as different systems of lettering and contrasting colors of cards. In order to protect these cards and to prevent their removal, different devices are made use of; ordinarily a rod, which is held in place by a thread, answers all purposes. This passes through the length of the drawer at the bottom, with a knob exposed on the outside of the drawer. When it is desired to insert or remove cards, it is a simple matter to withdraw the rod by simply turning the knob. But it frequently happens that these indices comprise lists of great value, and are therefore jealously guarded, and for such a case a means of locking the rod in place is provided.

All of the Library Bureau systems make use of the vertical units for the accommodation of correspondence and papers, and these are made to embrace a variety of shapes and sizes, and also various combinations of drawers for different purposes. These include correspondence file, check file, invoice or credit file, card indices (three sizes), document file, order file, legal file, routing or map cabinet and cupboard for storage.

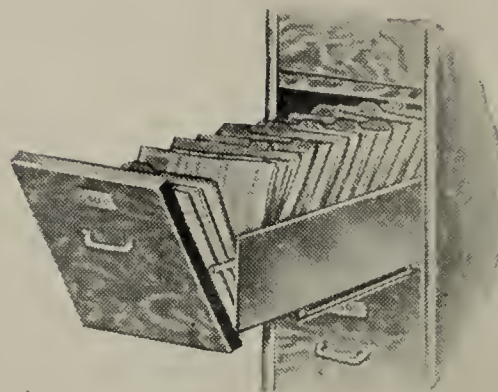
The expanding feature of the vertical unit is an interesting one. The first unit purchased has a two-paneled side; when the single unit has been outgrown and it becomes necessary to purchase another, the new one is ordered without these panels, but merely with a single thin strip, which serves to offer a division between the two parts, and the panel which it was necessary to disturb, is placed on the end of the new case.

Another variation of the use of this card index system is in keeping account of stock. In this respect it is a perpetual inventory, showing at a glance the number of articles of any desired style or character as well as receipts at different times. The absence of reliable system in this respect is disastrous to any business.

Adjustable Filing Units.

As a rule, the person contemplating the purchase of a filing system must make up his mind as to just what he wants, and it will be supplied by the dealer from his stock or made to the

special order of the purchaser. When completed, this piece is generally of permanent construction, so that it permits of no change or alteration, but if anything different is desired, the entire unit must be replaced by another. Probably the newest thing in this line of fur-



DRAWER WITH DROP FRONT.

niture is the system of the Humphrey Bookcase Company, which is so designed that it stands ready at any time for instant alteration or modification to suit the demands of the office or establishment in which it is in use. It frequently happens that after a cabinet of drawers, for instance, has been in use some time, it will be found that there is a greater demand



CARD INDEX.

for one shape or size than another, and while some drawers are overcrowded, for this reason, others are empty. Ordinarily this cannot be remedied, but with the Humphrey it is a simple matter to remove the partitions and slip them back in another position or of a different size, and then replace the discarded drawers with others of more desirable dimensions.



CARD INDEX AND FILING SYSTEM.

Thus, one of these sections is capable of 1,200 different changes so that there is hardly any likelihood that the dealer will be unable to accommodate the most whimsical patron, right from his

stock. This is the strong feature of the Humphrey idea. Dealers will be able to take an order and fill it at once, without the necessity of sending the order to the factory when special construction is required. From the dealer's standpoint, he is enabled to carry a full line of this character of furniture with one-third less floor space than heretofore, and less investment of capital.

In several details of construction the Humphrey system is unique. In the first place there is an ingenious blending of wood and metal in the design of the drawers, which gives the furniture the pleasing appearance of wood and the durability of metal. The wood is used in the exposed parts, such as fronts, while the metal enters into the construction of the trays. Many advantages are claimed for this arrangement, notably the free working of the parts at all times without regard to the condition of the atmosphere. The Humphrey construction also involves some improvements in the drop front which facilitates the filling and examination of the contents of boxes, and also the operation of the vertical file drawer upon a steel carriage with ball bearings.



VERTICAL FILE.

Sectional Bookcases.

In the construction of the original sectional bookcase, each shelf comprised a unit. While this arrangement has great advantages, the criticism was sometimes made that there was necessarily a waste of space, due to the fact that there could be no adjustment of the distance between the shelves. In other words the sections were made to accommodate books of more than average size, and where a section was filled with small books there was no means of utilizing the surplus space. The newest addition to the ranks of sectional cases is the unit of five-shelf sections. The principle is identical with that of the vertical files referred to above. The first unit is secured with the adjustable end panels and with each additional purchase of a unit the two are locked together upon the removal of one end panel, which is subsequently placed on the end of the new portion. This then makes a double bookcase in one piece, which can be expanded still further if desired.

The extreme elasticity of the sectional bookcase, in which one unit is placed on top of another, has made it very popular. In fact, one of the largest manufacturers refers to them as "elastic bookcases." The great variety of arrangement of which they are capable makes them exceedingly convenient, and no matter what is the shape or dimensions of a room where they are to be located, these pieces can be placed in an effective manner. The space under an open stairway is often hard to dispose of satisfactorily, but the small units of the sectional bookcase render the proposition an easy one. They can be stowed away here in stacks, one higher than the other, so that the space is entirely filled. They can also be arranged effectively around a mantle, under a window and around a pillar. The Globe-Wernicke Company was the pioneer in this field, and its product goes all over the world. The objection to the sectional

bookcase noted in a preceding paragraph, that they were unsuited for small volumes, has been overcome by fitting an auxiliary shelf in the back of the case which enables it to accommodate a double row of small books. Another means of meeting this matter is by an arrangement of cases of graduated sizes, the smallest being on top of the stack.

A new field is being exploited for the sectional bookcase, and that is in the equipment of such establishments as those of the tailor and the shoemaker. These devices are said to be very suitable for such uses because of the protection afforded the goods and the possibilities offered in the way of making a complete display of materials without exposing the delicate fabrics to the injurious action of dust.

The sectional case arrangement lends itself particularly to the establishment which is somewhat cramped for space. It is claimed that a great amount of material can be disposed of by their use, and, to a great extent, the necessity of tables obviated.

This innovation is being especially pushed by the Globe-Wernicke Company, of Cincinnati, which has agencies all over the world. The cases are 32 inches wide, which is a good size for the tailor, as most of his rolls are 30 inches in width. The great advantage of the sectional bookcase makes the system particularly appropriate for the tailor.

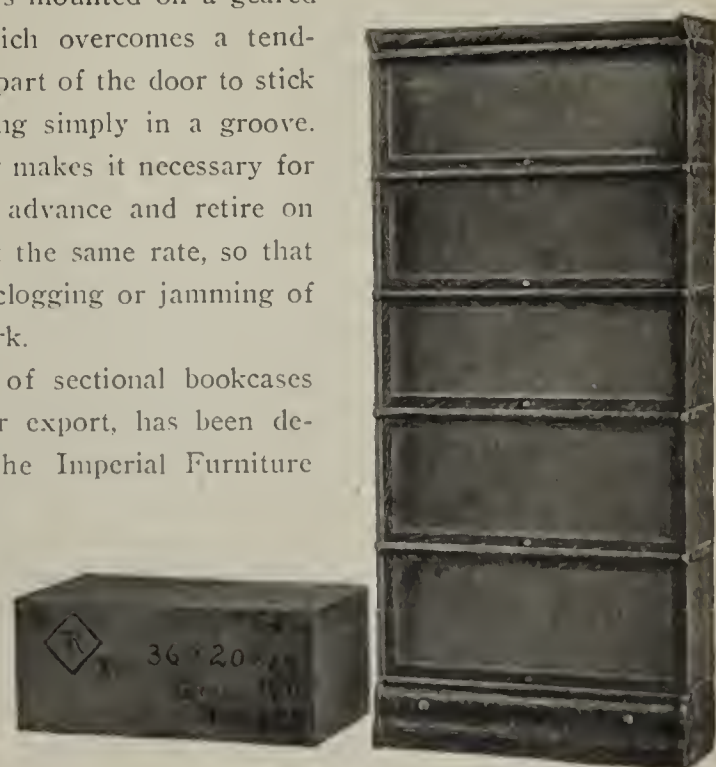
For convenience to the shoe dealer in thus displaying his wares, the company puts a nickel-plated rod through the center of the case, about three inches above the bottom. The heel of the shoe is placed over this, and thus the shoe is held in the best position for observation.

A well-made sectional unit is proof against dust and dampness, and it will be readily seen that these cases will be found available for many other similar uses.

The introduction of a desk section as well as a cupboard section proved a welcome suggestion. The desk section extends beyond the regular front of the bookcase, which extension is supported by two legs. The weight of the desk is maintained by the cupboard section or a regular book unit combined with the base, which always forms the bottom of the stack. These sections are made in all styles and finishes of wood.

While the principle involved in the construction of the sectional bookcases is identical, there are differences in the matter of detail. In that of the Macey-Wernicke Company the door of the unit is mounted on a geared traveler, which overcomes a tendency on the part of the door to stick when working simply in a groove. This gearing makes it necessary for the door to advance and retire on both sides at the same rate, so that there be no clogging or jamming of the woodwork.

A system of sectional bookcases expressly for export, has been designed by the Imperial Furniture



Company, of Grand Rapids, Mich., which maintains a large and handsome establishment, said to be the finest in the United States. This plant is devoted almost exclusively to the manufacture of furniture of this character for the foreign trade. This company makes use of an ingenious knock-down system, by which the bookcases are shipped in a very compact form. Each three-section bookcase weighs, net, 80 pounds, gross, 120 pounds, and measures 6 cubic feet. A six-section bookcase weighs, net, 140 pounds, gross, 200 pounds, and measures 10 cubic feet.

Expanding Typewriter Table.

A particularly ingenious manner of disposing of a typewriter was recently shown in New York in a table to accommodate the instrument. When in use, the top of this table expands to a length of four feet, so that it offers considerable room for papers, notes and pencils; but when closed, the table collapses in such a manner that it takes up but little more area than that

occupied by the typewriter itself. When closed, the machine is protected by a roll top.

This new table is shown herewith in both its folded and expanded shapes. The roll top, upon opening, falls back of the table, traveling in grooves in the supports. The hinged sides, which have served to support the reed top when closed are now dropped to a level of the table top, and

offer room for the papers and necessary paraphernalia of the typist. It is being introduced by the Grand Rapids Desk Company, of Muskegon, Mich.

This is an exceedingly convenient means of disposing of the instrument about a home, or even an office, where space is at a premium. In some homes the typewriter is made use of by the man just as the sewing machine is by the woman, and it is here that such a table comes in handy for the purpose of hiding the machine, the extreme utility of which is sometimes offensive to the eye of the fastidious. Thus one of the most welcome improvements in the manufacture of sewing machines is the drop lid by which the head, when out of service, is permitted to sink below the

level of the table top. The box which enclosed that portion of the machine above the table, and which was never anything but homely, was in this manner dispensed with, and when the machine was dropped, the outfit assumed much the appearance of an ordinary household table. This deception was increased by the use of a drapery to hide the legs and driving-wheel of the machine.

Another typewriting cabinet with some of the features of the one noted above has been on the market some little time, sold by the Remington Typewriter Company, New York. The roll top in this instance does not pass so far back, and the roll-supporting sides are rigid, but in order to give room to the operator that part of the table top which holds the machine is made to slide forward sufficiently to be free of interference from the woodwork at the side.

EXPOSITION AT TOURCOING, FRANCE.

The following has been received from our editor, Mr. H. L. Geissel, who is making a tour of Europe in the interests of the AMERICAN EXPORTER:

TOURCOING, France, Aug. 14, 1905.

An International Exposition will be held at Tourcoing, France, in the spring of 1906, and according to the opinion of a number of leading merchants whom I have interviewed on the subject it should afford an excellent opportunity to American manufacturers desiring to bring their goods before the French public. While the chief feature of this exposition will be the display of the textile industries of this part of France, other industries will be represented as well. Mr. E. A. Lami, the Director-General, stated that he would invite the large machinery builders of the United States, England and Germany to participate. Special attention will be paid to agricultural machinery and implements.

HENRY L. GEISSEL.

SUCCESSFUL TRANSATLANTIC TOW.

Success has attended a novel and daring experiment made by the Standard Oil Company, in towing a large oil barge across the Atlantic Ocean. The steamer E. L. Drake, of 4,205 tons, arrived in London a few days ago, having in tow the steel barge No. 95, also laden with oil. This experiment having been entirely successful, it is very probable that this method of shipping oil will be resorted to regularly.

Mr. Harriman's Visit to the Orient.—Considerable interest seems to be attached to Mr. Harriman's visit to the Orient. Before his departure, a few weeks ago, he had a conference with a number of railroad men in Chicago, which gave rise to the story that his trip concerned the establishment of railroads in the Philippines. It was also stated that he would probably commence negotiations looking to the inaugurating of a new steamship line across the Pacific. Mr. Harriman was repeatedly interviewed by correspondents, as he made his way from New York to San Francisco, but he steadfastly declined to say anything about the nature of his business abroad.

Board of Trade for San Juan.—A Board of Trade has been recently formed by the leading business men of San Juan, Porto Rico, with the thought of building up the infant industries of the island. A bureau of correspondence will be maintained, and the various boards of trade throughout the United States will be kept informed as to the requirements and resources of the island.



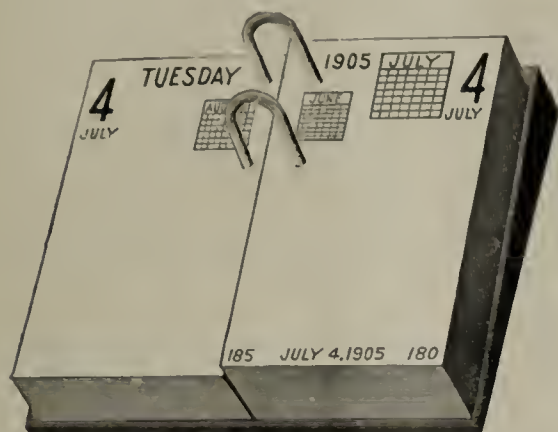
FOLDING TYPEWRITER TABLE—CLOSED.



FOLDING TYPEWRITER TABLE—OPEN.

HANDY CALENDAR STAND.

The calendar stand shown herewith has been recently brought out by the Samuel C. Tatum Company. It is designed to fill a place on the desk at the office or home. The base is slightly



over six by eight inches, and therefore occupies but little desk space. It is finished in black japanned or oxidized copper. The arches are of brass wire nickel plated, and the method of securing them to the base admits of their easy removal and replace-

ment. The pads have a double writing surface, which is an advantage over many other pads of this character. It opens like a book, and as it reposes on the desk, it not only indicates the day of the week and month, but also presents a large calendar for the current month, as well as smaller ones for the past and ensuing months.

FANS IN A ROUNDHOUSE.

As an experiment, early in the past winter, ten of the stalls in the roundhouse of the New York, Ontario & Western Railroad Company, at Middletown, N. Y., were equipped by the B. F. Sturtevant Company, of Boston, Mass., with a system of heating and ventilation particularly designed to rapidly remove the snow and ice from the running gear of the locomotives during the winter season. As a result of this, when the thermometer was from 5 to 20 degrees below zero, engines could be thawed out in from one to two hours, although completely covered with snow. In the old roundhouse, which this superseded, and in which the pits were equipped with steam-pipes, from five to six hours were required to accomplish the same result. The introduction of this system was attended by such success that the capacity of the roundhouse has been recently doubled.

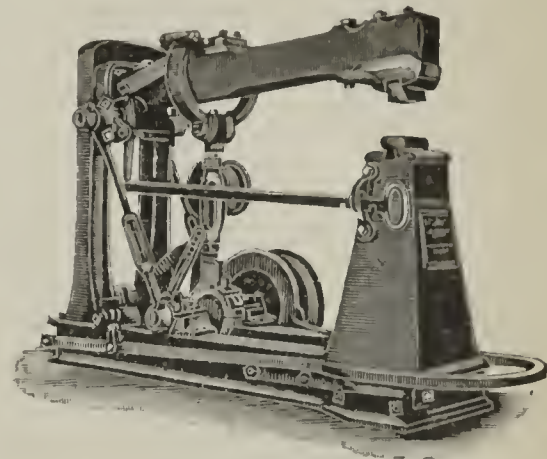
New Money-Order Form.—Postmaster-General Cortelyou has directed the issuance of a new form of foreign and domestic money-order blank, the object of which is to prevent fraud by means of alteration of the amount named thereon. While these losses never fall upon the Government, but always upon the individual who honors the spurious paper, the frauds have become so common that Postmaster Cortelyou determined to make an effort to prevent them by means of a new form printed on paper which will not permit of alteration without detection.

Possible Material for Paper-Making.—The United States may be freed entirely from partial dependence upon Canada for wood used in paper-making, if the hopes of some Mexicans prove to be justified. It has been recently discovered that the fiber of the Mexican papaw is suitable for this purpose, and in order to determine its value beyond all doubt, a quantity of the fiber has been sent to one of the paper mills of the United States, and will be put through the process. The fiber in question is the full length of the tree trunk, and, with the exception of the bark and a small amount of pith through the center, the stalk seems to be composed entirely of fibrous material. It grows rapidly, and is said to be suited for cultivation in the southern parts of the United States.

IRONWORKER'S ASSISTANT.

A number of minor improvements have been recently introduced into the construction of the helve hammer, made by the Hathron Foundry and Machinery Company, of Grinnell, Ia.

This machine is made in two sizes, one weighing 1,000 pounds and the other 1,350 pounds. It will be seen that the machine is well proportioned, and not open to the criticism of being top heavy. The bed is formed of two steel "I" beams firmly bolted together, which construction permits



of more weight being placed into the anvil, where it is needed, rather than in the bed, where it is not demanded. The anvil is separate from the bed and is clamped against it so that it rests directly on the foundation, thus relieving the machine of all jar and giving full resistance to the blow. The helve is made of hickory, because it is said to be more satisfactory than steel or iron. The stroke is adjustable, while the hammer is in operation, by the manipulation of the rod at the left of the anvil.

The machine is 3 feet 8 inches in height, occupies a floor space of 16 by 60 inches and requires one horse-power to operate it. The anvil of the small size is 28 inches high and weighs 350 pounds, while that of the larger machine is 500. The size of the iron in the former case is two inches, in the latter it is two and a half inches.

UNITED STATES RAILROAD VALUATIONS.

According to a bulletin of the Census Bureau, the commercial valuation of the railroad property of the United States is \$11,-244,852,000. The State of Pennsylvania leads with \$1,420,608,000, New York ranking second with \$898,222,000, and Illinois third, with \$805,057,000. These figures are exclusive of Pullman cars valued at \$51,000,000, and private line cars valued at \$72,000,000. The figures give the market valuation of the property, rather than their tax valuations.

Machine Concerns Consolidate.—The consolidation was recently announced of the Vaughn-Road Machine Company, of Peabody, Mass., and the Turner Machine Company, of Boston, Mass. The entire business will be taken to the works at Peabody.

Wireless Messages to Hawaii.—President Valentine of the Pacific Wireless Telegraph Company, has announced that within two months this country will have wireless communication with Hawaii. The work of constructing a station at Mount Tamalpais, about ten miles from San Francisco, Cal., is now under way, and will be completed at an early date. Soon after this it is hoped to establish regular communication. This distance is a long one for this service, but the officers of the company claim to have overcome all difficulties. In this connection it may be of interest to know that the greatest distance at which communication has been maintained between the boats of the United States Navy, is 262 miles.

IMPROVED GEAR DRILL.

A geared breast drill with some interesting features is just being introduced by John S. Fray, of Bridgeport, Conn., which is shown in the accompanying cut. To operate the latch which holds the large gear spindle in place, when changing speed, as also the latch which holds the chuck rigid when changing drills, it is not necessary to remove the hand from the supporting handle, as both latches are readily controlled by the thumb and forefinger without disturbing the grasp upon the handle. Each of these operations is almost instantaneous. The gear spindle latch is held in place by an automatic stop on the inside of the latch, which, while offering little resistance in shifting, is entirely sufficient to hold when in place. The drill

has a chuck with alligator jaws to take both round and square shank tools.

URGES THE GEORGIAN BAY CANAL.

J. J. Hill stands as one of the most earnest advocates of the long-agitated Georgian Bay ship canal. This, it is said, will be of considerable benefit to the American shipper by offering a lower rate for foreign shipments from the interior of the country, while at the same time it is acknowledged that it will be the means of diverting a very important trade from New York and Buffalo. In a recent interview Mr. Hill stated that the outlook was very hopeful for the building of this canal at an early date. Upon its completion grain could go from Chicago or from Duluth to deep water at Montreal for 2½ cents a bushel. Refrigerator ships, drawing 19 or 20 feet of water, could load direct from the packing houses in Chicago and sail from there to any port in the world during the season of open water. Mr. Hill says that the Canadians regard this as a very important matter, and there is nothing at present in the way of its achievement. The thing has been agitated for some time, so the details are generally familiar.

American Bicycles in Belgium.—The American bicycle has entirely supplanted the English wheel in Belgium, according to a recent report made by United States Consul McNally, at Liège. It is said that the American wheel suits the trade of that country better because of its lighter and simpler construction.

CHANGE IN MEXICO'S MONETARY SYSTEM.

Consul Canada, of Vera Cruz, reports that under the new system which went into operation July 15, the new Mexican peso will henceforth be the fixed standard of currency, and the value of all foreign coins must be expressed in equivalents of the same. In quoting the values of foreign coins the following arbitrary signs have been adopted for expressing the units of such legal currency; \$, signifies standard Mexican peso; Dls., American dollar; £, British pound sterling; Frs., French francs; Ms., German marks; P, Spanish peseta; Ks., Austrian crowns.

The foregoing signs are obligatory in all business transactions. The phrase "peso oro," which formerly signified an American dollar, must not be used to designate that coin, but instead of it, the word "dollar." Exchange formerly quoted at — per cent. of the value of the Mexican silver peso must now be expressed in decimal parts of the value of the new Mexican standard peso. Whenever the standard value of a foreign coin is less than that of the Mexican 3 points decimal will be used in expressing the value in Mexican currency, and on the contrary 4 points decimal may be used.

REGRINDING VALVE IMPROVEMENT.

Several interesting improvements have been recently made in the regrinding valves of the Lunkenheimer Company, although not radical ones, for these valves have already withstood the test of time. As an additional precaution against rough handling while attaching and under similar circumstances, the weight of the valve has been increased. The manufacturers have also altered the shape of the valve, which has the effect of increasing the diameter of the interior passage, this being greater than that of the connecting pipe.

Referring to the sectional illustration, it will be noticed that the hub which carries the operating stem is secured to the body by a union connection, which, in turn, screws over the shell of the valve body. By means of this construction it is impossible for the hub and the body to become corroded together, as the thread which holds the union ring to the body is protected at all times from the action of the steam, the joint being made between the flange on the hub and the neck of the body. This connection also acts as a tie or binder in screwing over the body, and tends to make the valve rigid and strong.

To regrind the valve, the bonnet ring is unscrewed and the trimmings are removed from the body. A wire or nail is placed through the lock-nut and stem, a little powdered sand or glass and soap or oil is placed on the disk and the trimmings are again placed in the valve and reground.

For the purpose of experimenting and testing, the Lunkenheimer Company maintains a well-equipped chemical and physical laboratory, and thus the company is enabled to give the fullest guarantee.



MEXICO'S TRANSCONTINENTAL RAILROAD.

All persons engaged in international trade will be interested in the news of the early completion of the Tehuantepec Railroad, 180 miles long, across the Isthmus of Tehuantepec, Mexico, connecting the Pacific Ocean and the Gulf of Mexico. It is anticipated that a tremendous business will develop over this line, pending the construction of the Panama canal, and that a great deal of the business will be held after the opening of the Panama route.

This proposition was under consideration a long time before the Mexican Government entered into a partnership contract with Pearson & Sons, London, and the name National Railroad Company of Tehuantepec was given to the new concern, with a working capital of \$5,000,000. The construction of the line was begun in earnest in 1898, and is now rapidly approaching completion.

A very serious problem in the way of the builders was to secure a suitable depth of water on the Gulf side, where the Coatzacoalcos River empties, and it was found necessary to extend the tracks out over the water to a point where a sufficient draught could be secured to accommodate the craft which would be attracted. These terminals are a mile long. On the Pacific side it was necessary to build great stone breakwaters to protect the shipping in the harbor.

It is said that the American-Hawaiian Steamship Company has closed a contract for the transportation of all the business of the steamship company between Atlantic and Pacific ports over the railroad, which will be finished in about one year. Quantities of sugar will be brought to the United States by these connections, with return cargoes of American goods.

The steamship company has ordered two new steamers of 12,000 tons cargo capacity from the Union Iron Works, of San Francisco, Cal., for this service. The boats will have a speed of 12½ knots, and will burn oil, as do all the vessels of this line. Mr. George Dearborn, president of the steamship company, is reported, in the *New York Herald*, to have said:

"There are no such terminals to be found anywhere, as have been built at either end of the Tehuantepec line, except at Hamburg. We expect to revolutionize the shipping of freight. When things are in working order there will be a continuous flow of freight from one end of the line to the other—180 miles. While one steamer is loading another will be unloading. Our larger ships will carry 12,000 tons, intermediate ships 8,500 tons, and smallest vessels 5,500 tons.

"We will have a triangular service of oil-burning ships between Salina Cruz, San Francisco and Hawaiian ports. From Salina Cruz to San Francisco is 2,050 miles; from San Francisco to Honolulu 2,080 miles, making San Francisco a half-way port. From Salina Cruz to Honolulu it is 3,400 miles. We will ship our sugar from Honolulu to Salina Cruz, then load with merchandise from New York to San Francisco for a return cargo. At San Francisco we will take cargoes of local freight for Honolulu. At present we are running our ships through the Straits of Magellan, but as soon as the Tehuantepec terminals are completed we will abolish the Magellan line except for occasional trips, thus saving 9,000 miles' water haul and thirty-five days' time.

"In other words, we will eventually nearly duplicate the overland railroad service. New business will be created be-

tween us and the North and South railroads running into New Orleans. The new route will reduce distances from New Orleans to 'Frisco to 3,000 miles, as against 4,500 miles by the present Panama route.

"We also expect to have a distant Pacific coast service from Puget Sound south. We will have the natural route for cotton and steel products of the South to the Orient. I understand that the Japanese steamship companies will extend their service to Salina Cruz. South America (the west coast) will also patronize the route, certainly until the Panama Canal is finished."

ANNIVERSARY OF THE "SOO" CANAL.

The fiftieth anniversary of the establishment of the canal at Sault Ste. Marie, between lakes Superior and Huron, was celebrated during the past month by ceremonies covering several days. The exercises were attended by the Vice-President of the United States and a number of other notables from both the United States and Canada. The first ship canal around the rapids in the St. Mary's River was completed and opened fifty years ago, with two locks 350 feet in length and a depth of 13 feet. To-day the American canal has two locks, one 515 feet long, the other 800 feet long and 21 feet deep, while there is a Canadian lock 1,000 feet in length.

The traffic through this canal is greater than that passing any other point in the world. In 1904 over 38,000 passengers were transported through the canal, as well as 31,546,106 tons of freight, valued at \$340,000,000. These figures are increasing constantly.

The Bureau of Statistics, Department of Commerce and Labor, reports that commerce through the Sault Ste. Marie canals at Sault Ste. Marie, Mich., and Ontario, Canada, during the month of June totaled 6,057,491 tons, as against a corresponding movement in 1904 of 3,139,236 tons, and in 1903 of 5,105,078 tons. Of the traffic for the six months of the current year 5,137,885 tons moved eastward and 919,606 tons westward, while of the total movement in both directions 5,046,079 tons passed through the United States canal and 1,011,412 tons through the Canadian canal. Among the items prominent in the eastbound movement may be mentioned 4,672,467 tons of iron ore, 3,402,137 bushels of wheat, and 2,708,686 bushels of grain other than wheat. The principal item in the westbound movement consisted of 728,888 net tons of soft coal. During the present season, to and including June 30, 13,133,444 net tons of freight passed through the canals of Sault Ste. Marie, an amount nearly 10,000,000 tons in excess of a similar movement in 1904, and considerably over a million tons heavier than that for 1903. Of the present year's movement 10,995,233 tons represent an eastbound movement, and 2,138,211 tons a westbound movement, while of the trade passing in both directions 10,815,299 tons moved through the United States canal and 2,318,145 tons through the canal in Canadian territory.

Italians Watching the Americans.—It has grown to be a very general custom, reports Consul Dunning, of Milan, Italy, for young Italian men to make a visit to the United States as the completion of a preparation for commercial business. The Consul says he knows of hundreds of cases, which have been called to his attention of late, of men making a trip to the United States with the sole object of picking up an acquaintance with the language and the business methods.

FIRE LADDER RAISED BY COMPRESSED AIR.

An American fire company made a tour of Europe a year or two ago, when the performances of the firemen and their equipment attracted a favorable comment in all of the large cities visited. The apparatus of the foreign fire-fighters in many of the municipalities was inadequate at that time, and one of the results of the tour of the Americans was to call attention to this fact in a very emphatic manner. Since then the fire department of London has been practically reorganized and antiquated pieces of apparatus replaced with more modern and effective machines. In the same way cumbersome methods were abandoned, and much time has been saved in making the attack on the flames, and improvements made at other points. Therefore, all American innovations in the line of fire-fighting apparatus will be viewed abroad with interest.

An interesting improvement has been made recently in the manner of raising the aerial trucks. As the improvement has been worked out by the chief of one of the municipal fire departments, the new invention may be regarded as espe-



cially promising. The inventor is Edward F. Dahill, the head of the fire department of New Bedford, Mass., and the invention is just now being called to the attention of the fire department officials of the various cities of the United States. The innovation referred to is the provision made for raising the ladder, which has heretofore been done by hand, and the efforts of several men have been required to accomplish this feat. The ladders being frequently very large and heavy, the operation is necessarily slow, and sometimes several minutes are consumed in getting the ladder into commission. In the new ladder this work is done in a few seconds by means of compressed air, with no other labor than that of turning a couple of valves. There is no necessity for the presence of more than one man

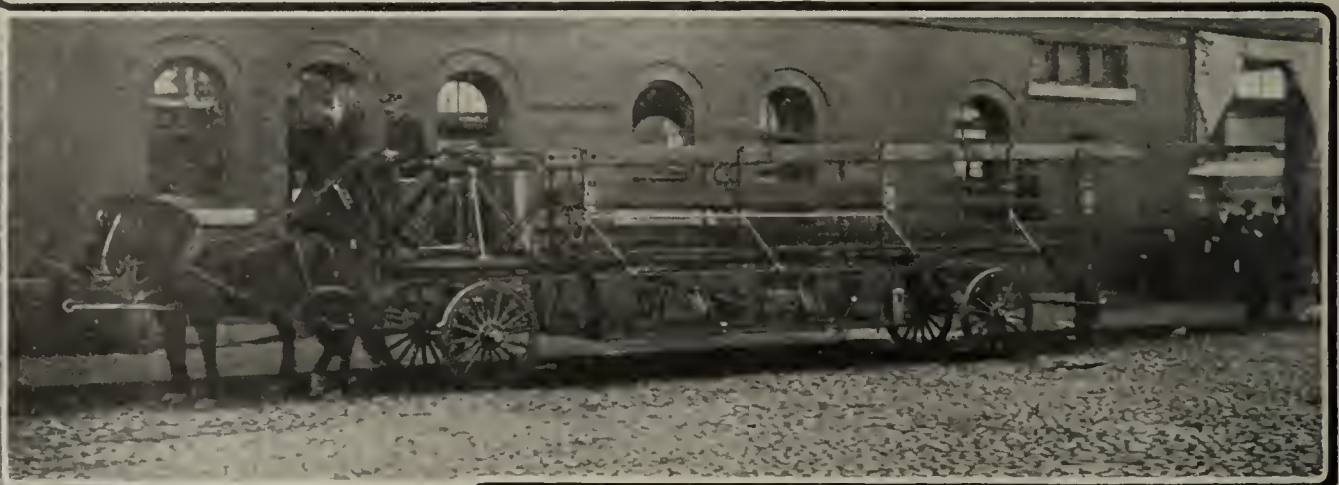
at the operation of raising one of the ladders by the improved device.

The air is contained in a tank 24 x 30 inches in dimensions, which is mounted on the turntable. The tank has connection to two 7-inch cylinders, with piston-rods secured to the ladder, comprising the means of raising it. A large ladder has been raised from a horizontal to a vertical position in five seconds, but, it is said, this is too fast for safety, and was done merely to demonstrate the capacity of the machine.

The charge of air carried in the tank is sufficient to raise and lower the ladder ten times. This is renewed when desired by means of a small electric motor. The device is supplied with an arrangement of springs, by which the ladder is brought to a gradual stop, either in the vertical or the horizontal position. The operating mechanism is contained entirely on the turntable, and it can be placed on any ladder which has a turntable.

SUCTION GAS PRODUCERS.

Suction Gas-Producer Plants are being more and more introduced, with great success, in this country on account of their simple working and great economy in running and maintaining expenses. Such a Suction Gas Producer is working in



the machine shop of the F. W. Horstmann Company, East Newark, N. J., where illuminating gas had formerly been used in connection with a gas engine. The plant, which was built by Dr. Oskar Nagel, of New York City, is developing 1 B.H. P. hour from 1½ pounds of anthracite coal on full load, 1 1-3 pounds on ¾ load, and 1½ pounds on ½ load.

The plant has a capacity of 20 H. P., and consists of a hand blower, producer with evaporator on top and a scrubber. The overflow water-pot, which belongs to the plant, is in the pit between the producer and the scrubber, and a small equalizing tank is connected on the floor below to the engine, so as to connect the scrubber with the engine.

By the sucking action of the engine the air is drawn over the surface of hot water in a water-jacket and saturated with steam, and this saturated mixture of steam and air is drawn through the fuel, whereby the Producer Gas is generated. From the producer, the gas goes through the scrubber, which is filled with coke, and where it is freed from dust and tar by means of water. From the scrubber the gas goes through the equalizer, which is a simple iron drum, to the engine.

This plant is provided with a hopper, which has a capacity sufficient to contain fuel for the whole working day. During the working day the plant requires no attention, except cleaning the grate once or twice. The fire is maintained at a low point at night, and about ten minutes' time is required to place the plant in shape for full operation.

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INDICATES THE MOTOR CAR'S SPEED.

The "speedometer" is a device which was originally put on the market for the purpose of gratifying a whim of the automobilist in keeping him informed of the rate at which he was bowling along over the ground; but recently it has developed a more practical function, and has been the means of saving the automobilist unjust fines. Nearly all the traps set for the auto-



mobile driver, by the constable, are very crude, and it is generally conceded that they are not to be relied upon. The official is eager for his share of the fines, and if there is a margin of doubt in his mind, he will give himself the benefit. As a rule, the chauffeur is unable to make any definite statement of his speed.

Without some device like the speedometer on his car he can only make an estimate of his rate of travel, and his guess will count for little when offset even by the unreliable watch of the constable. An entirely different phase is put on one of these cases before the magistrate, when the motorist can say positively, that he knew his speed at the time of his arrest. Backed by the absolute knowledge that he was not exceeding the speed limit, the chauffeur has a standing before the court which he could not have without that knowledge.

The manufacturer of the speedometer was quick to take advantage of this feature of the instrument's usefulness, and has further strengthened the equipment by furnishing with each instrument, a large brass tag, which is designed to hang on the rear axle with the license number, where it will be likely to be seen by an official making an arrest for speed violation. This tag is inscribed as follows:

"Police Notice.—This car is equipped with a Jones speedometer. The driver *knows* his speed. Don't arrest on guesswork."

The tag is 3½ inches in diameter, and of polished brass. The design is an attractive one, and will be seen at once by an official making an examination of the car, to which it is attached by a leather strap, and making note of the inscription will act very carefully.

These devices have been adopted by police departments of some of the larger cities. The members of the bicycle squad in Washington, D. C., have their wheels equipped with these instru-

ments, and, when pursuing a suspected violator of the speed law, the official can tell by a glance at the instrument, the exact rate at which the ground is being covered. Thus equipped, there is no chance for error, and the policeman is enabled to swear positively in giving his testimony before the court. These instruments were purchased in this case by the city of Washington, but in the city of New York, where there is no appropriation available for such a purpose, some of the bicycle policemen have thus armed themselves at their own expense, in order that they shall be sure of their ground before taking an alleged offender into court.

AWARD OF THE GLIDDEN CUP.

The award of the Glidden Cup, in the contest from New York to the top of Mount Washington and return, was made early last month, to Percy P. Pierce, who drove a Great Arrow car, built by the George N. Pierce Company, of Buffalo, N. Y. We reproduce herewith a photograph of the car, taken upon its return from the 1,000-mile trip, with the members of the party which accompanied it in the contest.

It is evident that it was a clean-cut victory, as there seems to have been no evidence of any protest against the award. Pierce was voted the winner, not only by the commission having charge of the contest, but also by his fellow competitors, as provided for by the rules of the contest. This provision is unique, and reads as follows. "At the conclusion of the tour the duly qualified owners, whose cars have finished the tour and complied with the conditions thereof, will be asked to name by ballot the three competitors who, in their opinion, have accomplished the best all-around touring, and submit the same



WINNER OF THE GLIDDEN CUP.

to the commission appointed under the deed of gift. The information will be used by the commission in deciding the winner."

There were twenty-two contestants complying with all the requirements, who were, therefore, eligible to vote on the matter, and of these Pierce received fifteen ballots.

Four other contestants were said to have clean records, as follows: The White, of E. H. Fitch; the Maxwell, of Ralph Coburn; the Darracq, of S. B. Stevens, and the Cadillac, of J. C. Kerrison. Of the thirty-three cars which started, twenty-eight finished in New York.



FIRST AERIAL FERRY IN THE UNITED STATES.

The aerial ferry is no novelty abroad, but the first construction of this character in the United States will be viewed with interest by foreign engineers and others. This structure spans the ship canal at Duluth, Minn., the head of the Great Lakes, which is a very active shipping section. There is a clear height of 135 feet above the ordinary stage of the water of Lake Superior, this height having been fixed by the Lake Carriers' Association to permit the passage of the highest masts. The total height of the highest part of the structure over the water is 186 feet, and the depth of the truss at the greatest part is 51 feet. The distance of the trusses from center to center is 34 feet, and the clear span is slightly over 393 feet.

The car measures 50 feet long by 30 feet wide, and has two finely finished cabins, 30 feet long and 7 feet wide. The car is elevated to a point 6 feet above the United States Government piers, and is entirely overland when at rest at either end of the run, so as to minimize the possibility of obstruction to navigation under any circumstances. The car is moved by two 50 horsepower electric motors placed under the car, which operate two 9-foot drums. Over the drums there is passed a 1-inch cable extending to the truss, and then over idle wheels through the inside of lower chords of the truss, to the tower, where they are made fast, and thus produce the motion which causes the car to move over the canal.

A most ingenious arrangement of the track has been provided to carry the car and hangers. It is enclosed on the three sides, within the box section of the lower chord, and therefore there is no danger of its becoming coated with sleet or snow during the winter season.

Within the chords there are four rails, two in each, with 32 wheels arranged in pairs, rolling on the rails and carrying the truck. Eight pairs of these wheels are employed on each lower chord. The friction of all the working machinery is reduced to a minimum, as the bearings on these wheels, as well as those on the drums and idlers, are of the roller type.

It is said that this car will carry a loaded double-truck street car, 350 passengers and two loaded wagons with the horses. This is equivalent to 63 tons, and this can be done with perfect safety. In the construction of the bridge 1,400,000 pounds of steel were required, and 730 tons of concrete were used in the foundations for the 8 piers. The total cost of the bridge was \$100,000, and

the cost of the annual operation, it is said, will not exceed \$7,500, including the interest on the bonds. This amount will represent a saving of one-third the cost of the operation of the steam ferry which was previously maintained at this point.

DARNING-BALL IMPROVEMENT.

The original darning ball was a mock-orange of suitable shape which answered the purpose of darning so well that for many years little or no effort was made to improve upon it. In fact, the only advance made in this line for a long time was the manufacture of an oblong-shaped device of celluloid or similar material, much like its forebears, the old mock-orange.

A very decided step forward in the darning-ball manufacture has been recently made by the Gibbs Manufacturing Company, of Canton, O., which concern has brought out an implement having a number of good claims for distinction. In the first place, the general shape of the bearing surface backing that portion of the fabric to be worked upon, is somewhat flattened, and thus much more convenient. The chief merit of the device, however, is a spring ring, fitting around the knob which holds the work firmly in place. When once this has been adjusted, it remains in place until the work has been finished, thus removing many inconveniences of the old form.



NEW FEATURE OF THEATER HEATING.

A novel feature of the ventilating system of the new Majestic theater, in Boston, Mass., is the arrangement for circulating the air in the theater, when the house is not in use, thereby effecting an economy in the heating of the house. The fresh air inlet ducts leading to the heating coils and blower are provided with openings into the stage area, which are controlled by dampers in connection with those admitting air to the gathering chamber above the auditorium; by closing the latter and opening the connection from the cold air duct to the stage (which closes the connection with outside air) the air within the theater travels in a closed circuit through the heating coils, plenum chamber, etc., with very economical results in the initial heating of the theater in cold weather. The dampers in the ceiling of the auditorium, as well as also the main damper in the roof opening, are controlled from the stage. This system was designed by the B. F. Sturtevant Company, of Boston, Mass.

FURNITURE EXPOSITION IN PRAGUE.

A great furniture exposition has been opened under the auspices of the cabinet-makers of Prague and the vicinity, in the Industrial Palace of that city, to continue until the end of September. A special international technical department, under the charge of the Technological Museum of Prague, consists of motors, woodworking machinery, and all kinds of cabinet and wood worker's tools and appliances, metal fittings, decorations and all supplies.

TYPE-HIGH NUMBERING MACHINES.

In looking over old account-books, the one thing which usually impresses itself upon the investigator, is the scrupulous care with which the pages of the volume are numbered by hand. It is a common thing to see these figures made with such exquisite precision that they closely resemble print. No one, to-day, would consider for a moment this tedious operation, when it can be done



No. 12345

so cheaply and quickly by the ordinary paging and numbering machines made for the purpose. These are in extensive use in nearly every civilized country. Hand devices are still made use of for impressing the page number on small account books, but for more serious work, and for num-

bering sheets, tags, cards and similar articles in quantities, the work is largely done by the type-high numbering machine.

This style of apparatus was introduced into the United States several years ago by the Wetter Numbering Machine Company, Nos. 331 and 333 Classon avenue, Brooklyn, N. Y., and has been constantly improved until it now represents an exceedingly compact and effective piece of mechanism capable of a wide range of adjustment and manipulation. The device immediately revolutionized the numbering of all sheets and pieces, such as are fed through cylinder and platen presses.

The machine is placed in the form and locked up with the type, and the changing mechanism, by which one number is made to succeed another in its proper order, is operated by a plunger containing the word "No.," a letter, asterisk or a similar prefix. The plunger is maintained by a spring at a point slightly above the level of the type, which brings about the change with each impression. Where it is desired to dispense with this prefix, a blank slide is supplied for use, and in this manner the impression of the figures alone is made on the paper.

The latest style of the Wetter numbering machine is known as the "Midget," and in this, the size has been reduced to three-quarters of an inch wide by one-half inch deep.

The Wetter machine has been adopted by the United States Government for use in the Government Printing Office, and also in the Post-Office Department, for numbering money-orders. It is also made use of by many foreign governments, and by the principal bank-note companies all over the world.

CUTTING BOILER SCALE BY WATER-POWER

Many alleged tool inventions and improvements put upon the market prove, upon investigation, to be very slightly different from the product of some other firm. A slight change in some unimportant detail, is sometimes sufficient to justify a manufacturer in making a great stir about the so-called invention, so that it is refreshing occasionally to encounter a mechanical novelty with a new principle, and with changes, basic in character, over existing devices. Among such, might be mentioned the "Demon" boiler-tube cleaner of the General Specialty Company, No. 70 Carroll street, Buffalo, N. Y. This machine consists of a new cutter device, which is driven by water-power, the exhaust water from the motor being used for the purpose of removing the chips of scale as they are



TEST OF SCALE CUTTER'S POWER.

broken away. This motor belongs to the general class of rotary engines, but differs from most of them in the essential feature that it has a central shaft and is free from all valves.

The inlet and exhaust water is taken care of by properly arranged ports. The pistons of the motor, which are three in number, are attached to the shaft, and each in turn automatically projects across the cylinder, thus forming a partition between the inlet and the exhaust ports, which the motive fluid must push forward before it reaches the exhaust ports. As no water can reach the exhaust until the piston has passed the exhaust ports, the water consumed is directly proportional to the speed at which the machine is revolving. When the machine is working on unusually heavy scale, the speed and the water consumption are both somewhat reduced; but the pressure on the piston, and therefore the driving force, increases.

This machine has developed great power, and this is clearly illustrated by the accompanying reproduction of a photograph made from an actual test. A turbine form of motor, shown on the left, and the "Demon" cutter, which is seen on the right,



were attached to a pump at 100 pounds pressure. The hook below each scale was attached to a cutter arm of each machine, whereupon the "Demon" developed forty-two times the pulling power of the turbine.

In the "Demon" apparatus it is designed that the knives shall cut the scale rather than grind it. The cutters, with tooth-like edges, are secured to a heavy head, the latter being directly attached to the shaft of the cleaner. These cutters are journaled to the head at the front ends, and slide in grooves at their rear end. These cutters are not thrown out by the centrifugal force, but are forced out by powerful springs, so that they engage the scale in a positive manner.

In order to prevent damage to the tubes after the scale has been removed, the cutters can be adjusted to a field of operation within the limits of the tubing. The cutters can be readily removed and replaced at any time with but little trouble.

NEWEST AMERICAN INVENTIONS.

SANITARY SYSTEM FOR BARBER SHOPS.

It was at one time thought that the acme of cleanliness and sanitary safety for the patron of the barber-shop had been reached when he maintained his individual outfit at the tonsorial establishment. But this, it seems, is an antiquated notion, for the most recent innovation in this line provides for the promiscuous use of cups and brushes among the patrons of the establishment, but likewise makes provision for the sterilization of the apparatus after each use. The inventor of this system is Henry Rosenthal, of New York, who has recently secured a United States patent. His notion involves the use of a cup somewhat different from the mug now in general use in this and some other countries, and in its place is supplied another of glass, which is of such shape



and dimensions as to permit of ready and thorough cleansing. These are provided in quantities by a supply-house, and when delivered to the barber each glass contains a piece of soap and the bristle portion of a

brush. Before these have been placed in the cup they have been rendered antiseptic, and in order to protect them from contamination afterward, the glass is covered with a paper cap, the ends of which are fastened down around the rim. On this paper is printed a certificate that the contents are thoroughly clean in every respect.

In practice the barber breaks this seal in the presence of the patron. After use the outfit is laid aside to be returned to the supply-house, and to be resterilized or renewed before being used again.

There has been a great improvement the past few years in the methods made use of in such establishments with the view of preventing the interchange of disease through the medium of the barber's implements. It is very evident that there is a demand for some measures which will give barber-shop patrons a reasonable assurance that they are not to be inoculated with the germs of a disease which some previous frequenter of the establishment may have been suffering from.

WIRE-RIBBED HARNESS.

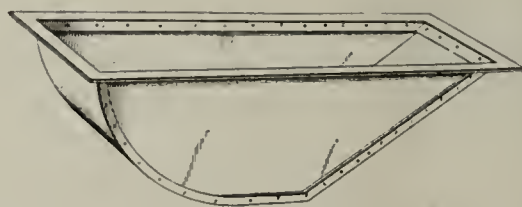
In the effort to secure a lighter harness without sacrifice of strength, Wallace Dann, of Norwalk, Conn., has hit upon the scheme of making the harness with a rib of wire at such points where it is subjected to unusual strain. As a sample of the



process, a familiar arrangement known as the "Dutch Collar" is shown herewith. It consists mainly of a stout wire of such a length as is required to encircle the animal, and the metal is entirely covered with leather. The more exposed portions, such as the breast-strap and trace-ends, are more thickly fortified with the leather facing.

SAVES ANIMALS' LIVES AND LIMBS.

An interesting improvement in dipping tanks has been recently made by Andrew A. Kramer, a resident of Kansas City, Kan. This invention relates to dipping tanks which are generally included in the paths or runways leading from cattle pens to a slaughter-house, shearing station or like places, and are designed to contain a cleansing or medicinal solution through which the animals are obliged to pass. Ordinarily such tanks have abrupt upright ends at the entrances thereof, causing the precipitation of



the animals into the tank to be very violent, and frequently resulting in the breaking of the limbs of the animals or causing them to turn

in falling, and, being unable to right themselves in the confined space, they are drowned.

The present improvement is designed to overcome the objections noted above, which is done by making the approach to the plunge of a gradual nature, and permitting the animal to make its way carefully into the pool in front of him.

This tank is made of sheet metal, and the front is curved so that after the animal has started into the tank there is no retreat, but it must pass along, which it is enabled to do in a manner sufficiently deliberate to permit it to keep on its feet. The back part of the tank extends upwardly and rearwardly to constitute an exit-chute for the animal. The lines of this tank are such that less solution is required for the purpose of complete immersion. Where large herds are being treated this consideration is a very great one.

DRY METHOD OF PLACER MINING.

A patent has been recently granted to John Waterhouse, of New York, which covers the process of placer mining by a dry method. This invention is an improvement in the machines for drying sand, detritus or earthy matter containing gems or stones, making use of dry air for absorbing and carrying off the moisture, and, when sufficiently dry, carrying away the sand and dust contained in the material operated upon.

The inventor says: "If, instead of water, we fill the separator with dry sand it will require less pressure of air to overcome friction and start the air flowing up through the interstices of the sand than through the water; after the air has been started, less pressure is required to keep it going.

"We propose to use a high-pressure blower run by an oil engine, wind-mill or other suitable engine not requiring water. Such blowers are capable of exerting an air pressure of 10 or 15 pounds per square inch, and in connection with the blower an air-receiver is maintained, supplied with a check-valve, so as to provide an even flow of air through the separator, regulated by suitable valves. A pressure greater than 3 pounds per square inch will probably never be required to start with.

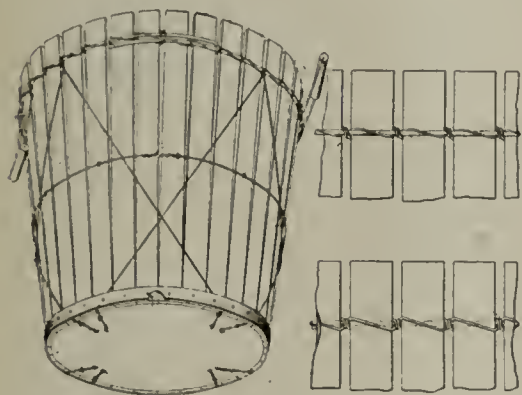
"Contemplating a separator $3\frac{1}{2}$ feet in diameter and $5\frac{1}{2}$ feet high, and estimating that it will take 20 minutes to clean up one separator full, the total capacity of this small unit will be 35 tons of sand per day.

"The principle of this invention hinges on the fact that the specific gravity of quartz, of which sand is usually formed, is 2.7, while gold is 19.3, or more than seven times heavier. It is claimed that there will be no difficulty in separating and retaining the heavier and valuable metal by blowing away the valueless sand and dust. The pebbles remaining at the bottom of the separator may be drawn out through the larger opening and examined for nuggets and gems.

"At first it will be necessary to send a feeble current of air through the separator so as to agitate the sand and permit the very fine gold to settle at the bottom and to be drawn off whenever required, then gradually increase the current in the agitating or branch pipe and blow the sand away by means of the blast or main pipe."

NEW BASKET OR CRATE.

An improvement in the manufacture of baskets or crates has been recently made by Walter Morley and Andrew F. McAtee, of Salem, Ore., and their system has been made the subject of a patent by the United States Patent-Office. By reference to the illustrations it will be seen that there has been constructed a basket which comprises a set of slats or staves held together by a combination of hoop or band iron and binder wire. In the weaving of this basket it will be noticed that there is a loop of the wire between each of the staves, the effect of which is to permit



of expansive or compressive strain as applied to the basket without endangering the safety of the contents of the basket.

This feature comprises the novelty of the invention, and the inventors claim that it is of great advantage in

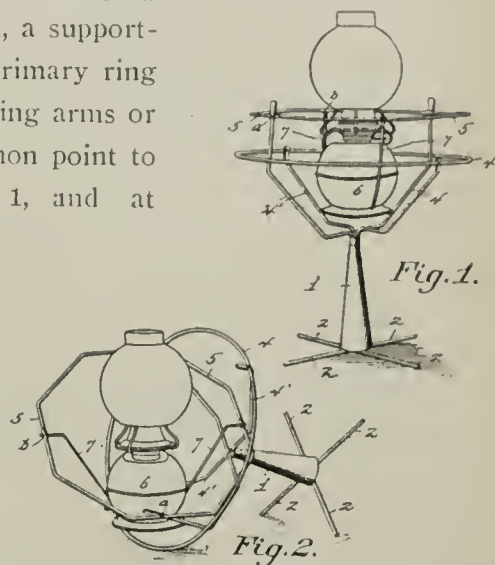
the transportation of fruit, as the contents are stoutly protected and at the same time the basket is yielding to the point that the surface of the fruit is not marred in the handling of the package. The principle of this basket construction is also applicable to coops for the shipment of live birds.

NEW COTTON SEPARATOR.

A patent was recently granted to Warren A. Patterson of St. Louis, Mo., covering an improvement in separators for removing the cotton from the bolls, after the blossom has been picked from the plant. As generally practiced, the cotton is removed from the boll, leaving the boll on the plant. This has not only proven tedious, but is not entirely successful because the dry bolls frequently become broken. The parts are collected with the cotton and must be subsequently removed by cleaning devices. According to this invention, the cotton is picked with the boll, and consequently there is no cotton remaining on the field, as is frequently the case when the fibers adhere to the detached boll. The new invention offers the means of stripping the cotton from the boll, and the operation is accomplished by an ingenious arrangement of toothed cylinders, rotating at different speeds, through which the bolls are passed, and in so doing are separated from the cotton.

SAFETY LAMP-HOLDER.

An ingenious lamp-holder, the use of which makes it impossible for the lamp to be overturned, is covered by a recent patent granted to Charles J. McKinney, of Rome, Ga. In the accompanying drawings Fig. 1 is a perspective showing the device when employed as a stand lamp, while Fig. 2 is a similar view showing the device turned upon its side to illustrate the manner of protecting the lamp in case of accident. Referring to the drawings, 1, designates the supporting member, preferably in the form of an elongated body or bar, carrying at one end a plurality of right-angulary disposed engaging arms, 2, and at the other end, a supporting frame, 3, comprising a primary ring or annulus, and four supporting arms or braces, 4, attached at a common point to one end of the member, 1, and at diametrically opposite points to the ring or annulus, 4, a pair of arms being extended beyond the frame, and having pivoted thereon, as at a, for free rotation a secondary ring or gimbal, 5, which is of smaller diameter, and adapted to turn freely through

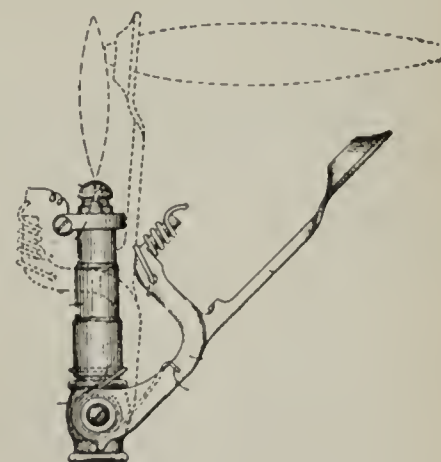


the primary supporting ring, 4. The lamp is hung suspended within the gimbal, 5, attached to or otherwise retained by a hanger in the form of a pair of arms which project upwardly and outwardly from the body, and have their terminals journaled at diametrically opposite points, as at b, in the gimbal whereby the lamp is free to rotate within the supporting frame. From this arrangement it is apparent that the lamp will remain in an upright position irrespective of that of the holder, thereby obviating any possibility of upsetting the lamp and causing any damage by explosion.

Where it is desired to make use of the device as a side or wall lamp, it will be seen that this style of bracket lends itself to the arrangement.

GUIDES THE CIGAR.

One of the common forms of lighting apparatus in general use at the cigar store and stand, consists of a continuously burning jet of gas of diminutive proportions, but which is automatically controlled by means of a valve in such a way that the flame is enlarged by the action of drawing the burner to the cigar for the purpose of lighting. It sometimes happens that this sudden spouting of fire burns the fingers or face of the smoker, and for the purpose of preventing accidents of this kind, the guide shown in the accompanying cut has been devised by Jacob J. Shickluna, of Buffalo, N. Y. The cigar being held between the teeth of the smoker at one end, the other end is thrust through the hole of the gauge so that the point of the cigar is exposed to the flame without any possibility of injury to the smoker.



NEWS OF THE EXPORT TRADE.

Sewing Machines in China.—According to a recent consular report there is a great demand in China for sewing machines of the most modern type, but at a reasonable price. Most of the machines sent into that country, at present, are of the hand-driven type, these being selected merely because the low price renders them more accessible to the natives. It is urged that the better class of machines could be easily disposed of in that country if they could be sold on the American instalment plan, which would place them within the reach of all who have use for them.

No Duty on Automobiles.—As a means of encouraging the introduction of the automobile, the Government of Uruguay will remit the duty on each of the first hundred cars brought into that country. It is claimed, however, by those in a position to speak, that this action will avail nothing as long as no effort is made to improve the roads of the country. The streets of the more important cities are said to be hardly suitable for the passage of an automobile.

The World's Silk Production.—The world's production of silk during the year 1904 was 20,268,000 kilograms, according to the Lyons Silk Syndicate, against 18,135,000 for 1903. The exports from China during 1904 amounted to 6,450,000 kilograms; Japan, 5,535,000 kilograms; Italy, 4,000,000 kilograms; France, 625,000 kilograms; Austria-Hungary, 315,000 kilograms; India, 180,000 kilograms; Spain, 77,000 kilograms; Levant and Central Asia, 2,186,000 kilograms.

Routes of Ocean Liners.—An appeal from the French Minister of Foreign Affairs and Marine has been addressed to the Governments of the United States, Great Britain, Germany and Holland, requesting an agreement with reference to the sea routes followed by ocean line steamships traversing the Banks of Newfoundland. This is intended to protect the French fishing vessels in that vicinity during fogs. France proposes either the general adoption of the French Transatlantic Steamship Company's route or the calling of an international conference to consider the question.

Steamship Line May Be Abandoned.—The announcement has been made by the Union Steamship Company that the Canadian-Australian line now operating between British Columbia and Australia, touching at Honolulu, will be discontinued unless an additional subsidy can be obtained. The company is already in receipt of \$50,000 per year from the Canadian Government, and an effort is being made to secure a like amount from the Australian Government.

Tourists' Automobiles in Japan.—Consul-General Miller, at Yokohama, reports that under the Japanese customs regulations, all automobiles which have been used, and which are to be used only for touring purposes, are allowed free entry into that country. The owner must make declaration of the facts under oath.

New Steamship Line Inaugurated.—The first steamer of the Canadian, Cuban and Mexican service started on July 27th from Halifax, N. S., with a cargo of fish and lumber. The vessels of this line touch at Nassau, Havana, and at several Mexican ports, including Veracruz and Tampico. The second steamer left Montreal on August 20th, calling at Halifax.

Locomotives for New South Wales.—An order for twenty locomotives was recently placed by the Government of New South Wales with the Baldwin Locomotive Works, at Philadelphia, Pa., for early delivery. These engines are of the ten-wheel type, known in New South Wales as class "P," and the plans call for European details throughout. The dimensions are: Cylinder, 20 inches in diameter; stroke of piston, 26 inches; driving wheels, 60 inches in diameter, and gauge 4 feet 8½ inches. The engines will burn soft coal, and the tank will have a capacity of 3,650 imperial gallons.

Goes to Merchant Marine League.—Alexander R. Smith, who has been superintendent of the New York Maritime Exchange for the past four years, tendered his resignation early in August to the directorate, to take effect on the first of the present month. Mr. Smith has made a connection with the Merchant Marine League, a national and nonpartisan, patriotic organization, with headquarters at Cleveland, O. The League has a membership extending all over this country, and its object is to stimulate American shipping in the foreign trade. A campaign is about to be commenced with the hope of influencing Congressional legislation at the next session.

Pelton Wheels for Japan.—An order was recently placed with the Pelton Water Wheel Company through Mitsui & Co., of San Francisco, Cal., for a 500-horse-power wheel for use in an electric light station in Japan. Other orders recently received by the same company are as follows: Homestake Mining Company, Lead, S. D., for an 800-horse-power wheel unit direct-connected to an electric generator, and Nevada Power Mining and Milling Company, a 3,000-horse-power wheel, to be used in generating electrical current, which will be transmitted to Tonapah and Goldfield, Nevada.

An Austrian Exposition.—United States Consul Twells, at Carlsbad, reports that in 1906 an exhibition will be held at Reichenberg, a town in Bohemia of about 35,000 inhabitants. This is an important town in Austria for the cotton and woolen trades. Close to it are the principal glass, weaving, textile, and linen districts of Austria. Reichenberg is a town which enjoys much popularity all over Austria for political and commercial reasons, and the exhibition at that place will probably be a success.

Greatest Wooden Ship Destroyed.—News has been received by cable from New Caledonia, of the destruction by fire, of the Roanoke, the largest wooden square-rigged vessel in the world. The vessel was 350 feet long, and her main trucks towered 180 feet above the deck. She carried 15,000 square yards of canvas. Her commander was Captain Amesbury, who was well known in marine circles all over the world. She was loading copper ore at the time of her destruction.

To Boom Mexican Industries.—Mention has already been made in these columns of the granting of a franchise by the Mexican Government to the International Financial Association, the object of which is to spread reliable information throughout the world concerning the investments of Mexico. This company is now organized, with the office of general manager filled by José Castellot, a member of the Mexican Senate, and a prominent figure in banking circles in that country. The headquarters of the association are in the City of Mexico.



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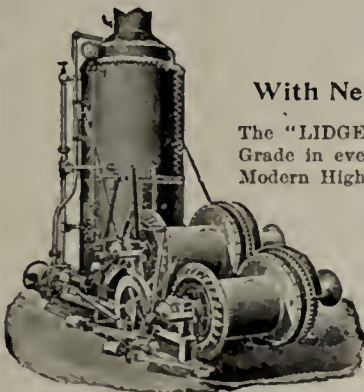
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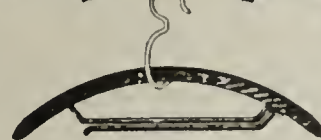
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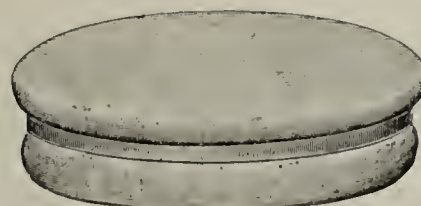
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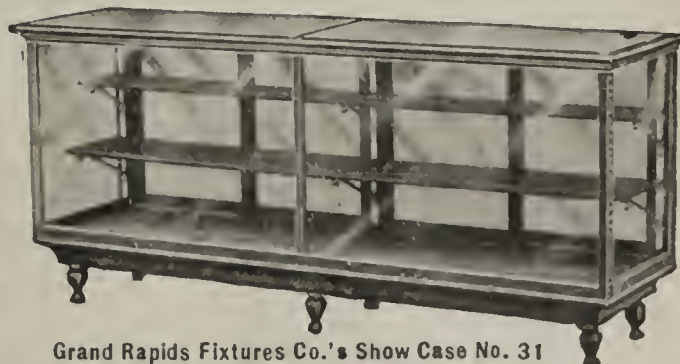
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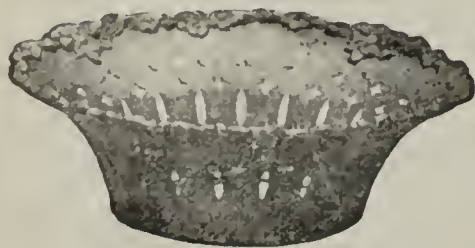
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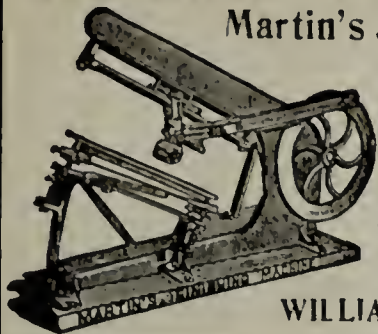
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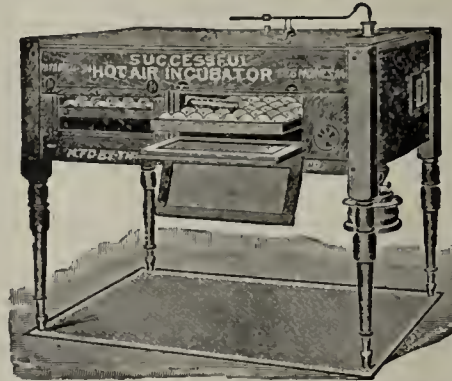
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(Continued on page 36.)

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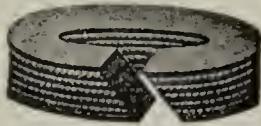
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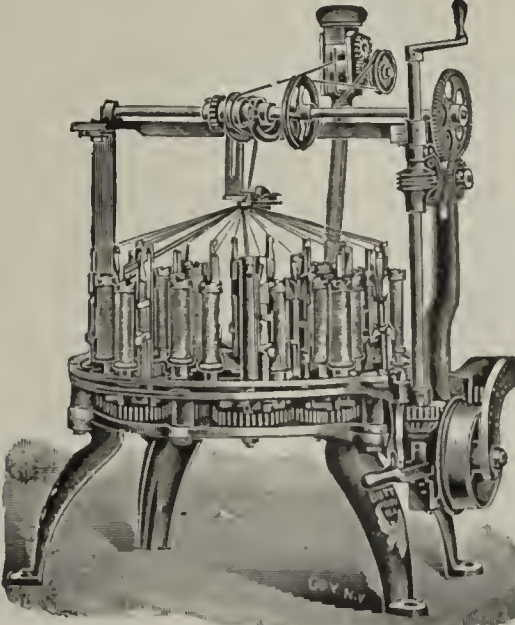
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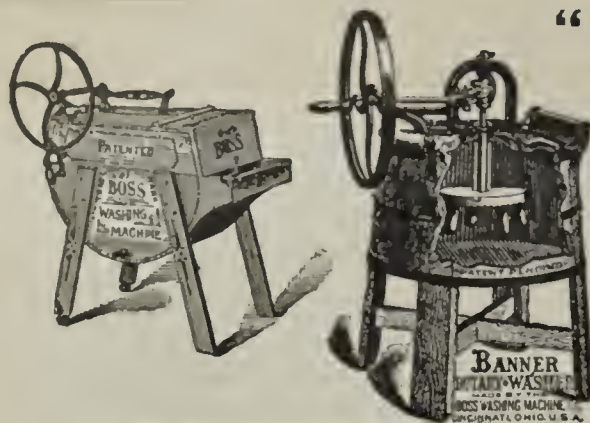
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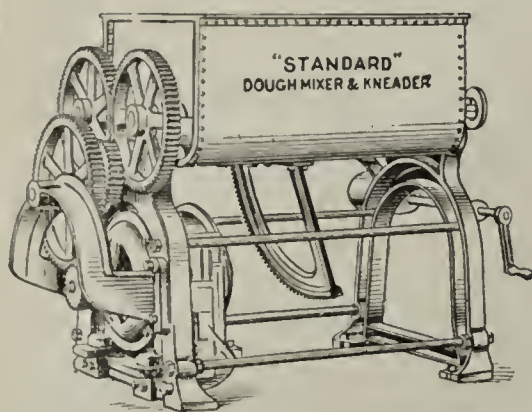
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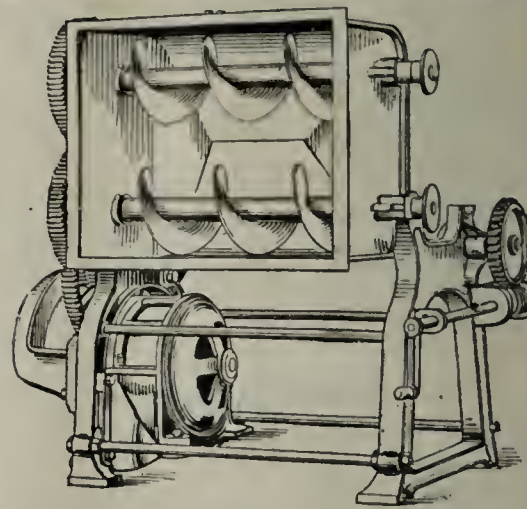


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(Continued on page 40.)



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Such is the verdict of thousands of users throughout the "States" of the



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The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

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By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.
The speed of the White Lily Washer is 2½ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

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Weight, 600 lbs. Measurements: 15x24x24 inches.

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WASHING MACHINE

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6. The people want a machine that will do the work with the least possible exertion, and this is the only ROTARY that will insure such results.
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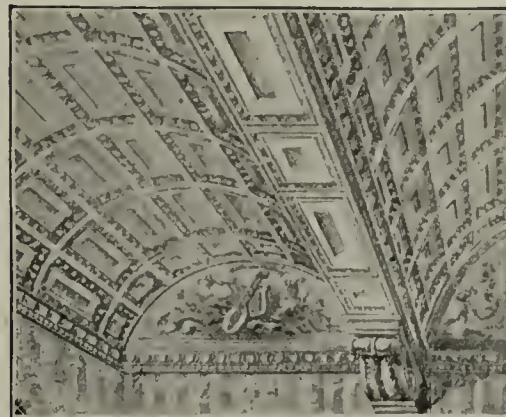
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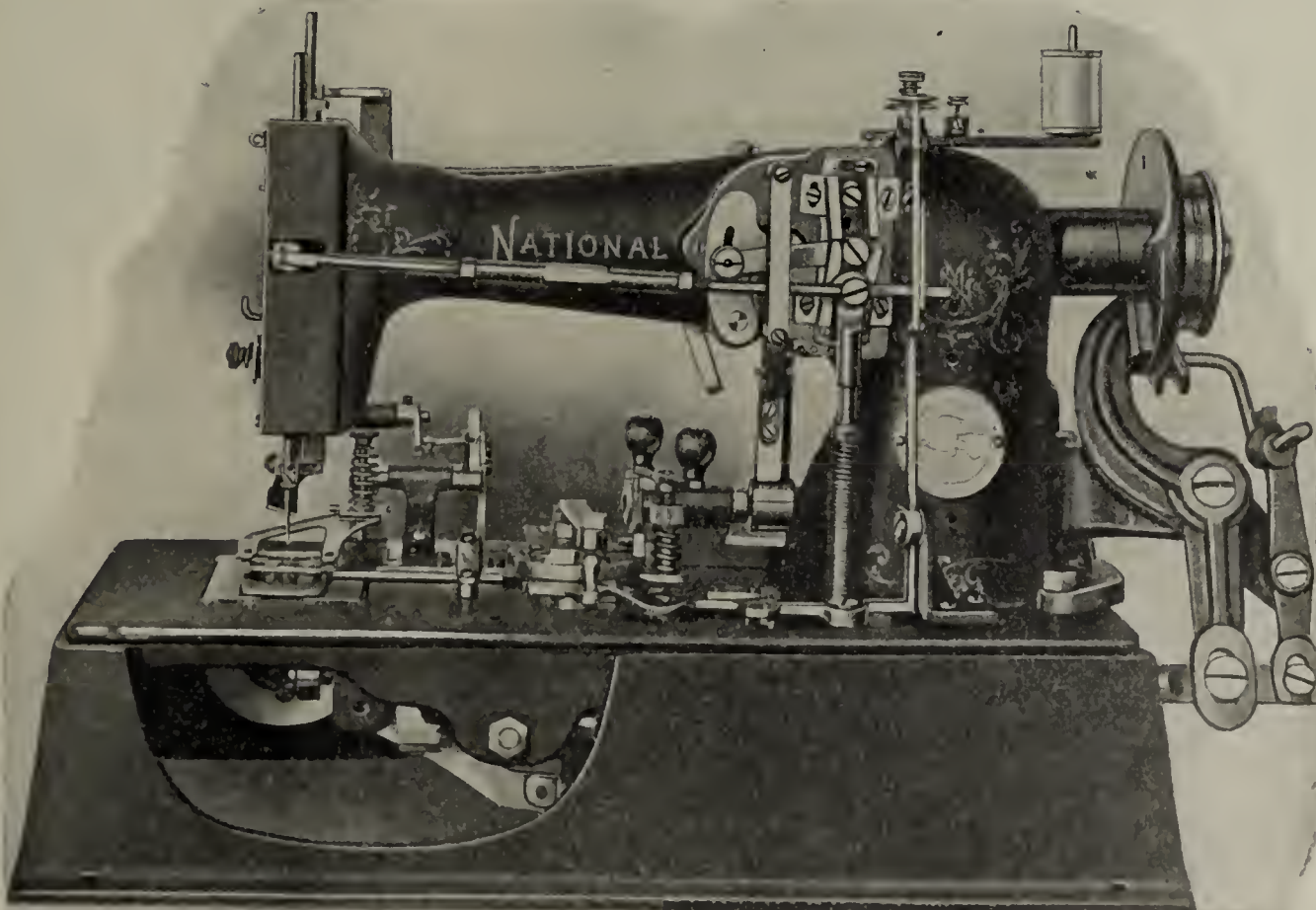


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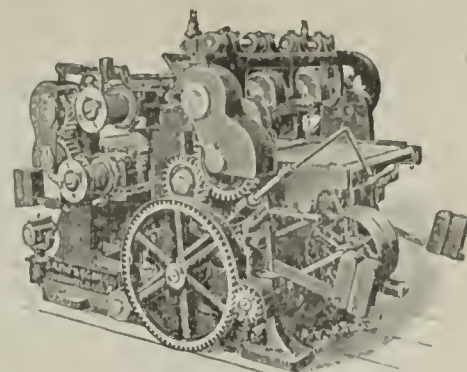
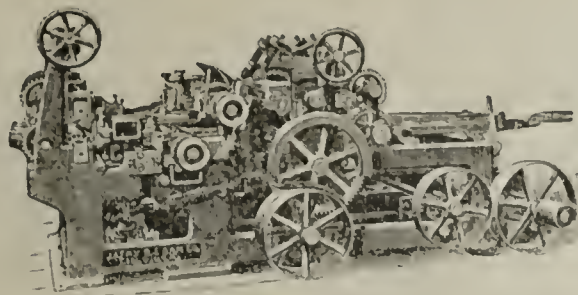
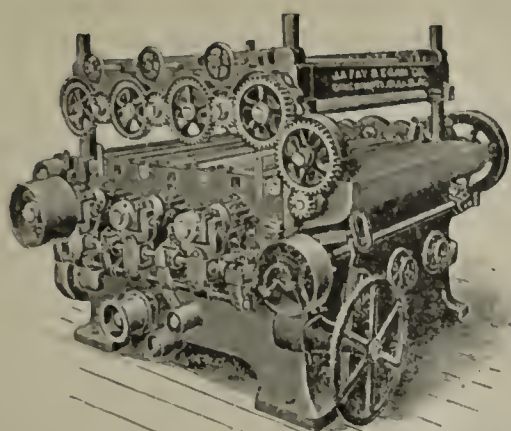
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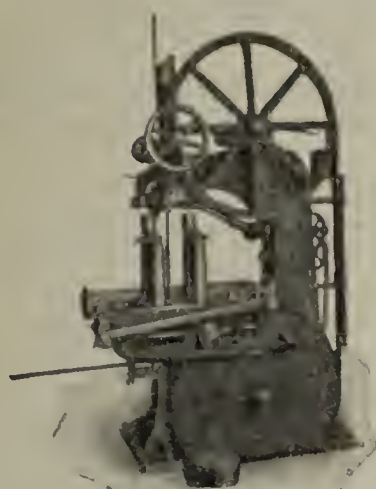
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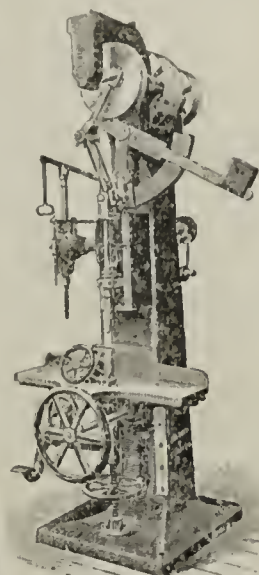
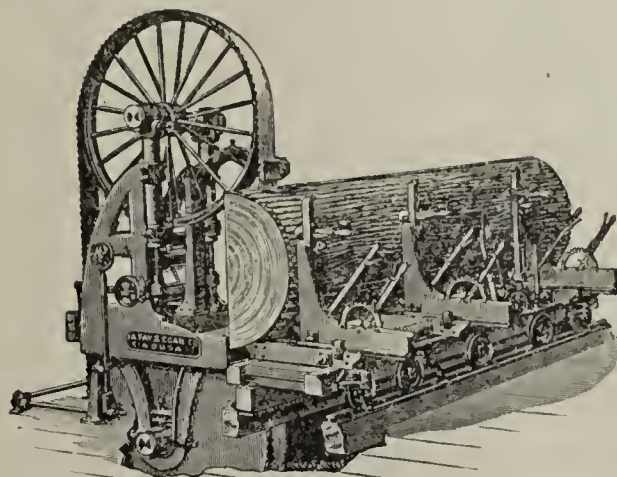
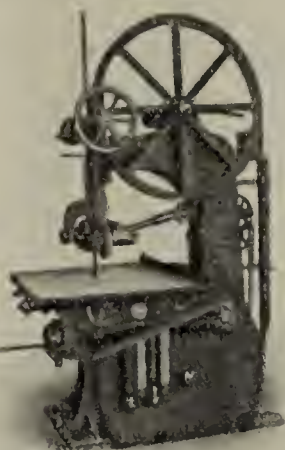
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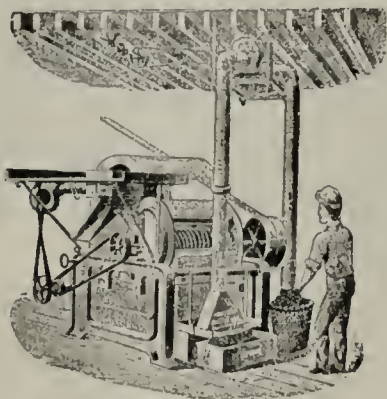
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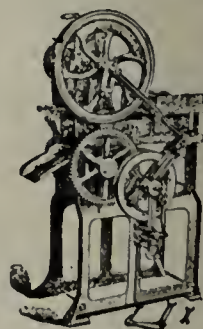
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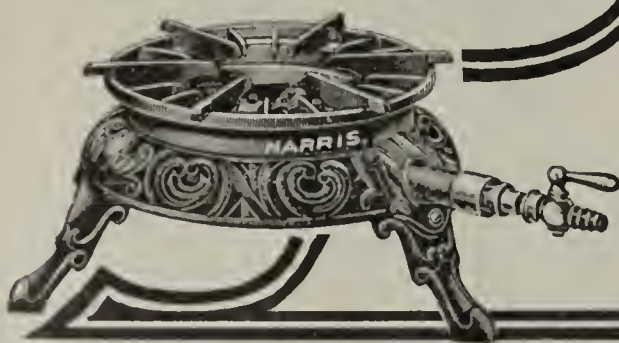
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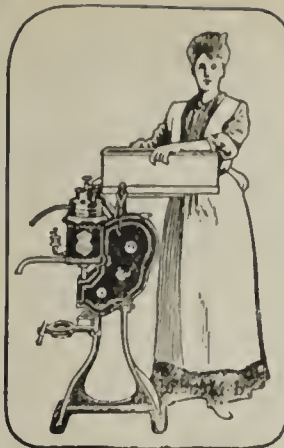
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We make a full line of
CLOTHES WRINGERS
for the Export Trade

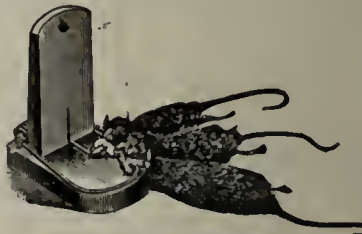


Delusion
Mouse Trap.



Rex Trap.

Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.

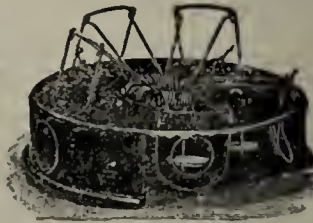
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap.

Aluminum Smokeless Oil Heaters

Equipped with Safety Burner.

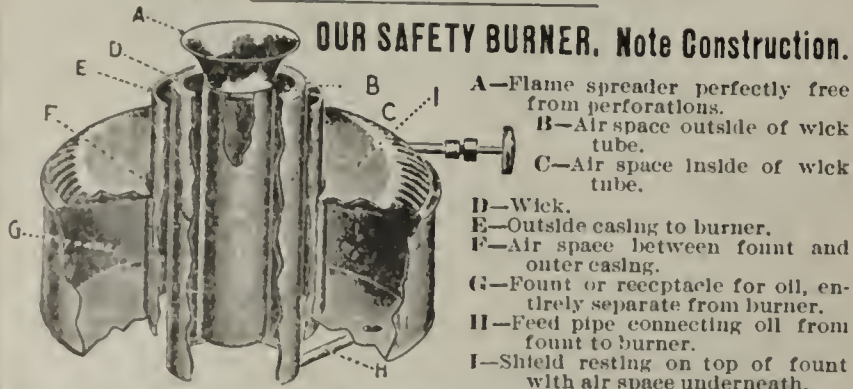
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OFFER
FOR FOREIGN
MARKETS:**

Upon receipt of \$35.00 in U. S. Gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29 $\frac{1}{2}$.



- No. 1—Brass burner; removable fount: 8-in. circular wick; height (ball down), 23 inches.
No. 2—Brass burner; removable fount: 10-in. circular wick; height (ball down), 25 inches.
No. 3—Brass burner; removable fount: 15-in. circular wick; height (ball down), 28 inches.

OUR SAFETY BURNER. Note Construction.



Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

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NOVELTY INKSTAND No. 3



American Novelties

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INKSTAND No. 1 (large),
retail, - 75 Cents
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All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

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Where known are recognized as the standard of perfection. They are clean to handle, do not smut or soil the work, are long-lasting and are made from the best colors. Send for catalogue. Orders received through any New York exporting house at export rates.

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Punches EXACT amount CLEAN THROUGH check. Simple and durable.

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Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

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We can offer you the exclusive agency for our "Kee Lox" hard, clean, non-grease carbons in your country, and we call your special attention to the fact that these carbons possess such superior merit that we know they are just what you have been looking for.

These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

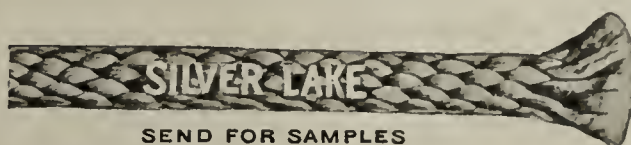
Furthermore, the "Kee Lox" carbons improve with age, so that the longer they are kept in stock the better they become. Hence, they can be imported in large quantities at one time without risk of loss in deterioration of quality.

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The kind that is cheap, that is made in all sizes, is durable, doesn't stretch, saves labor and is attractive. Write to the original manufacturers of Solid Braided Cordage for export prices. The best is the cheapest. Send for Samples.

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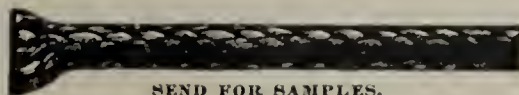


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No. 25 Quick and Easy Cork Puller.



No. 28 Samson Cork Puller.



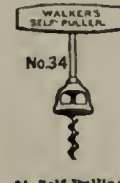
No. 42 Quick and Easy Lemon Squeezer.



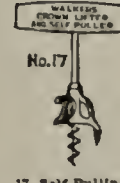
No. 45 Acme Lemon Squeezer.



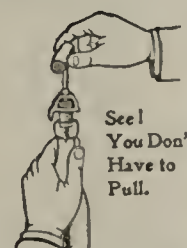
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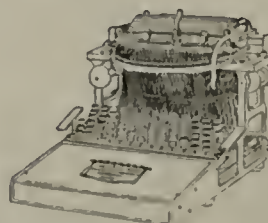
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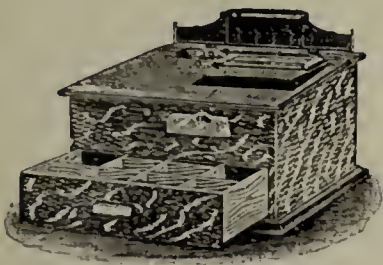


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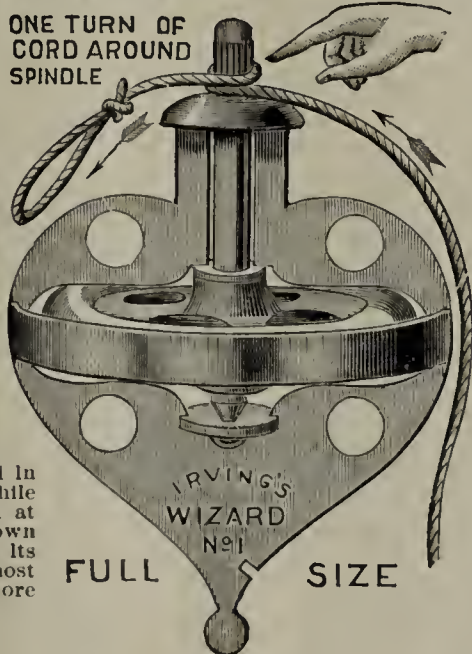
THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high speed machine, made of STEEL, nickel-plated; capable of 20,000 revolutions per minute, and can be put in motion by a child in three seconds. Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

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ORDER NOW. YOU WILL SURELY WANT MORE.

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Patent Applied for July 19, 1904.



A few of the many positions in which this wonderful top will spin.



EMBROIDERY HOOPS

Made from selected light-colored hardwood, finished perfectly smooth and true in shape.

Sold in over 25,000 stores throughout America and other countries

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SPRING-WINDING TOPS

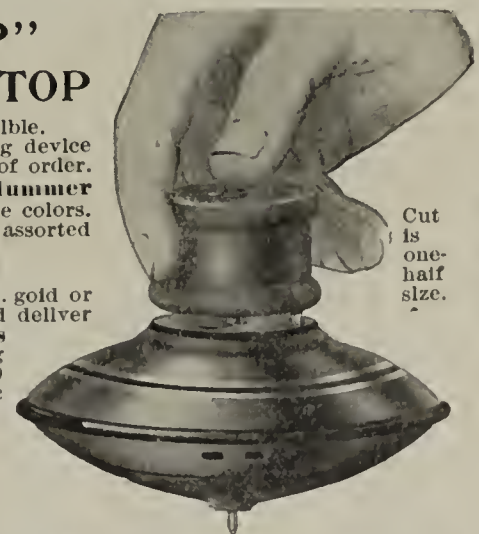
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Cut is one-half size.



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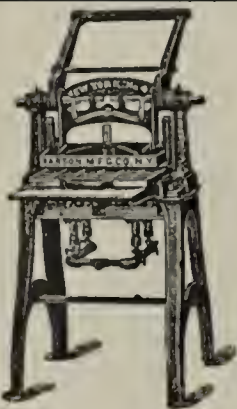
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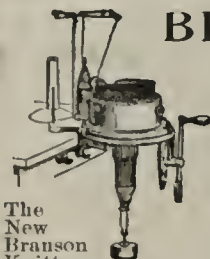
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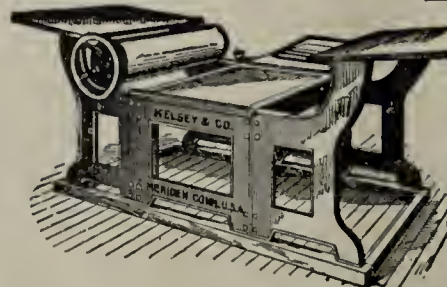


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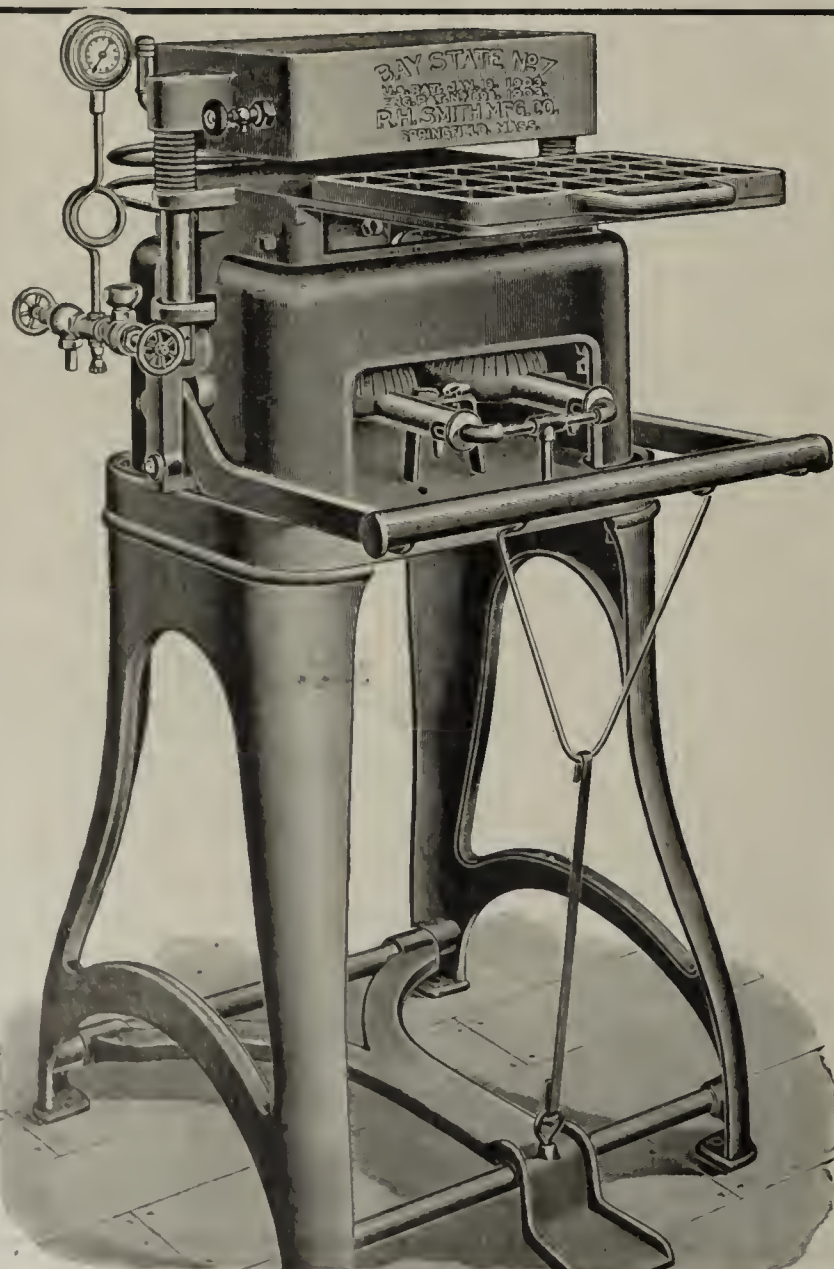


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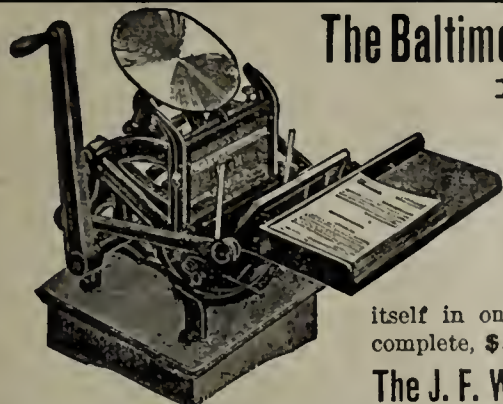
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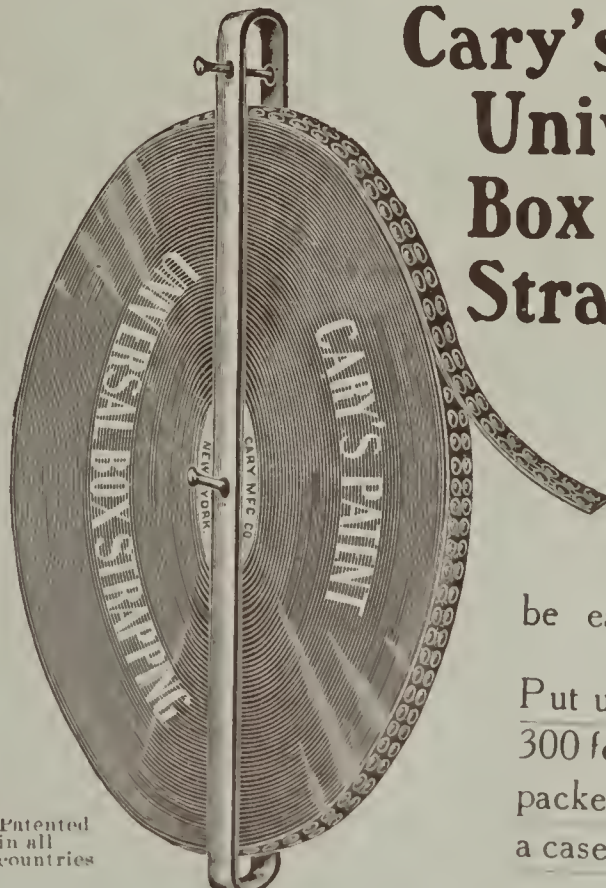
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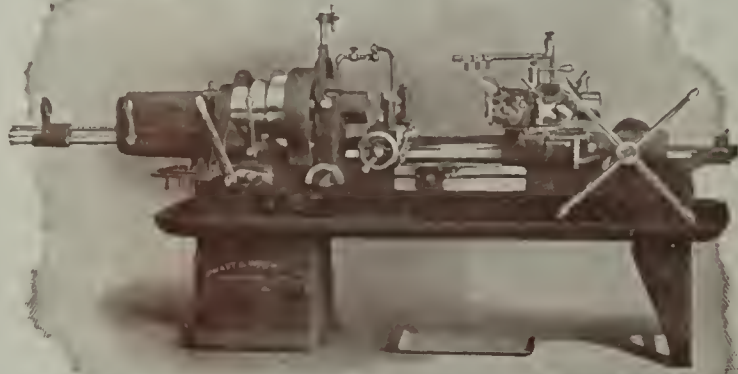
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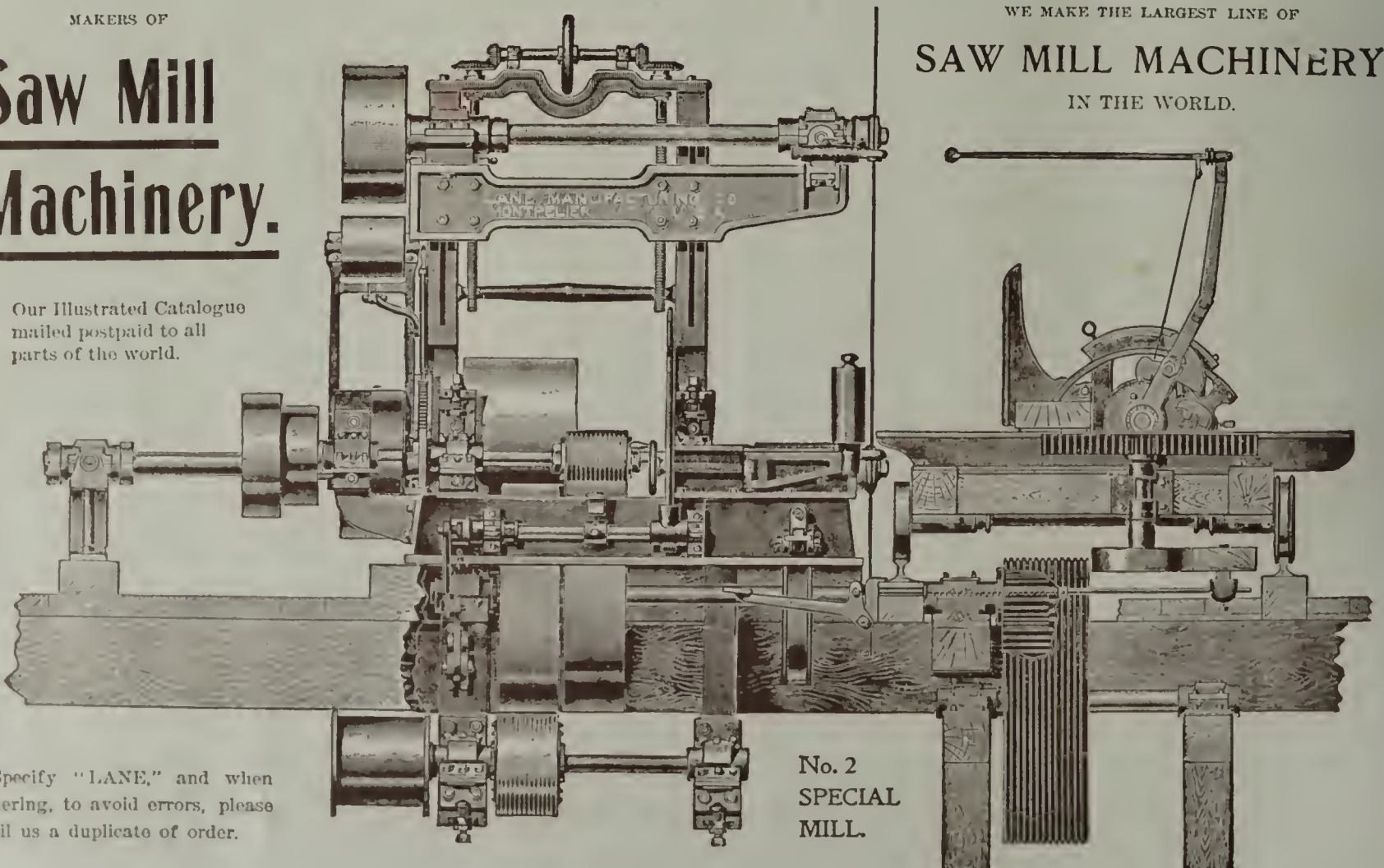
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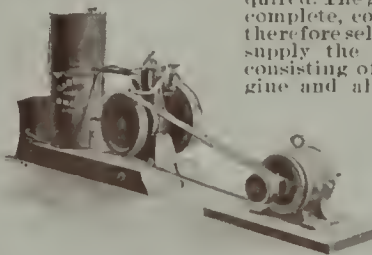
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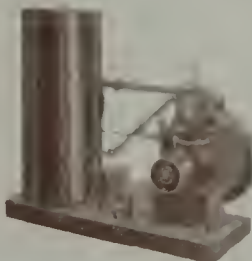
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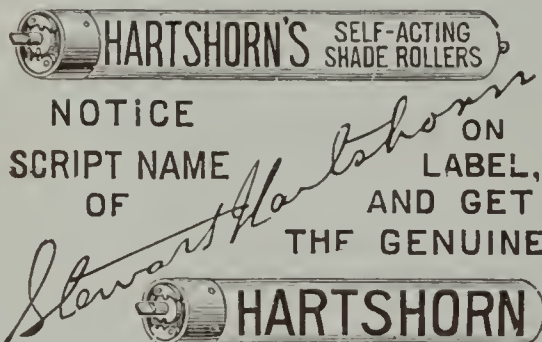
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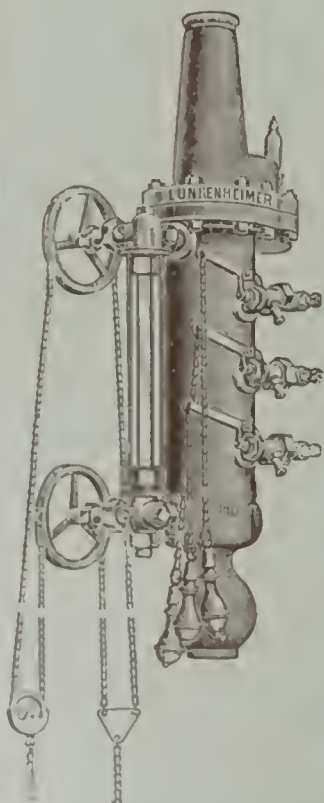
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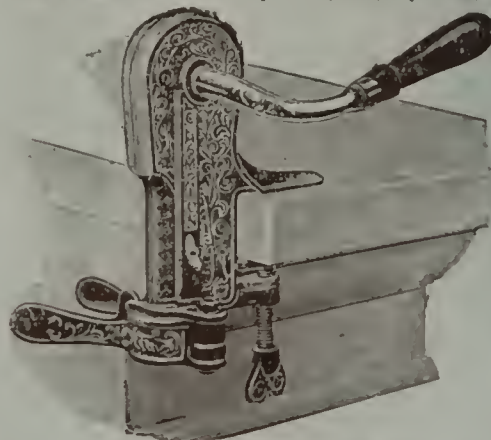
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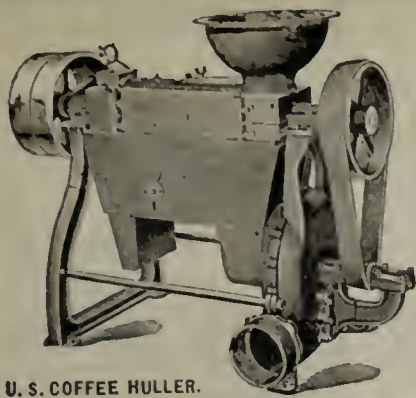
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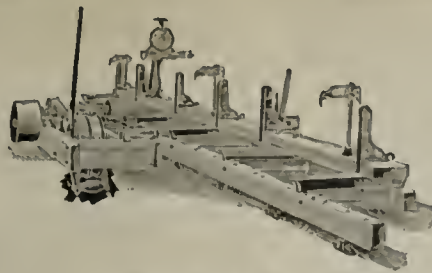


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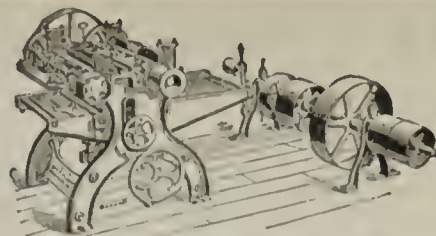
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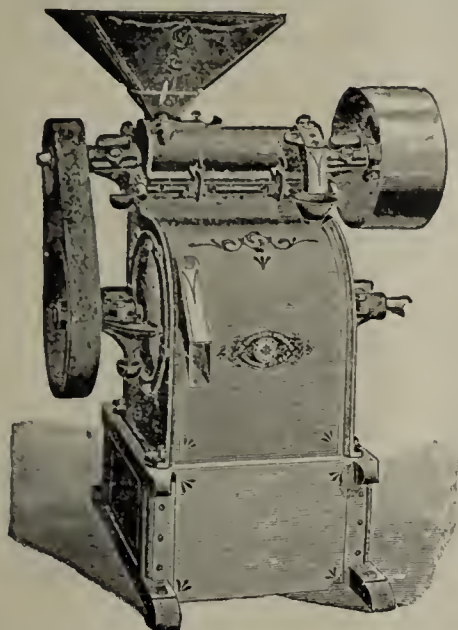
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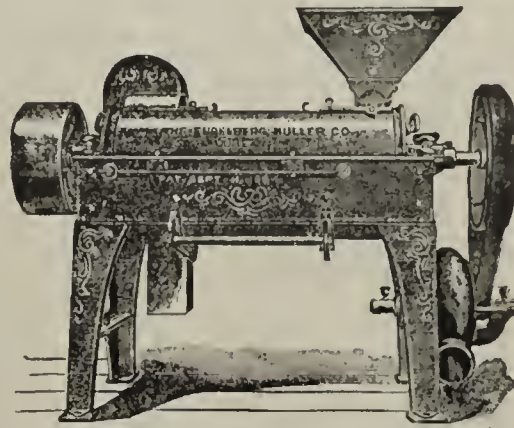


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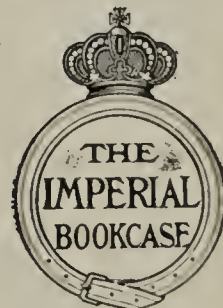
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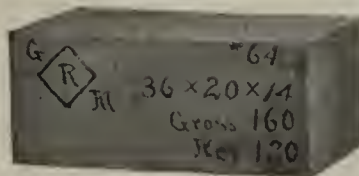
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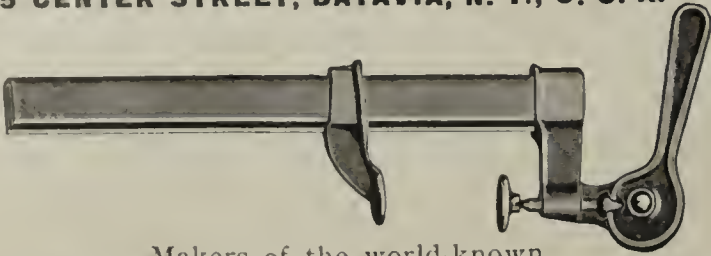


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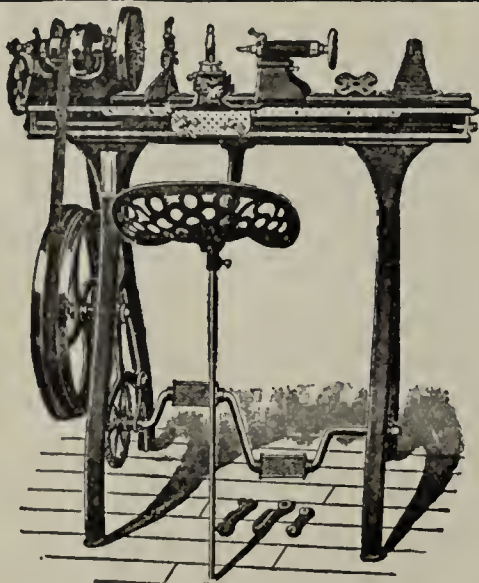
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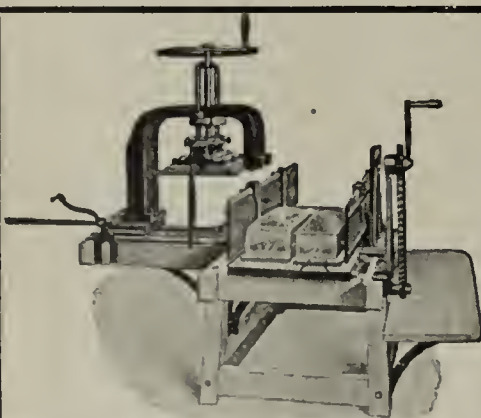
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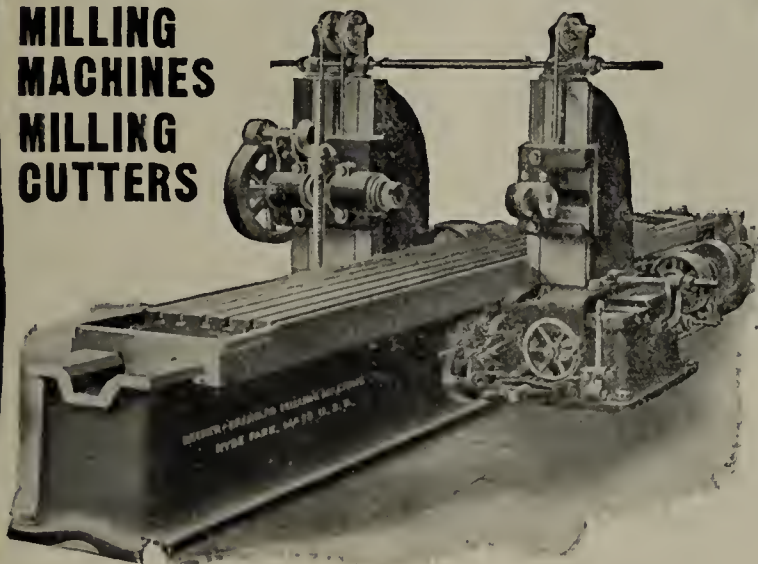
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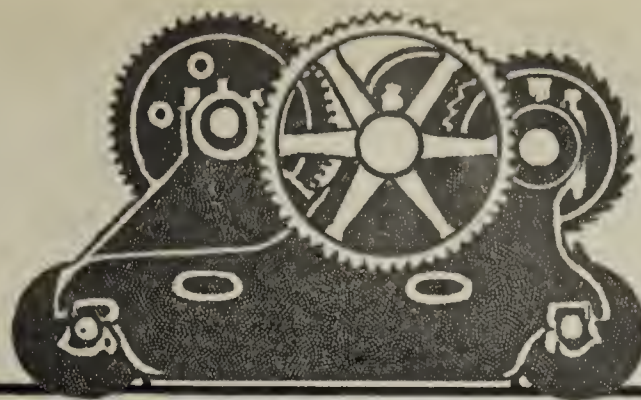
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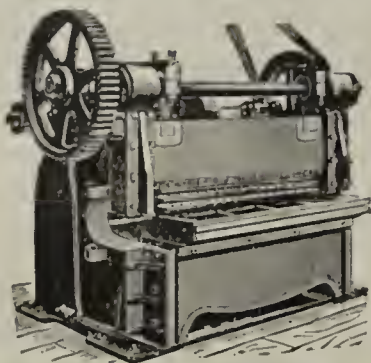
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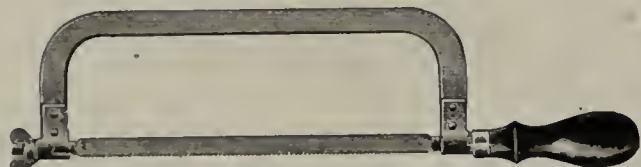
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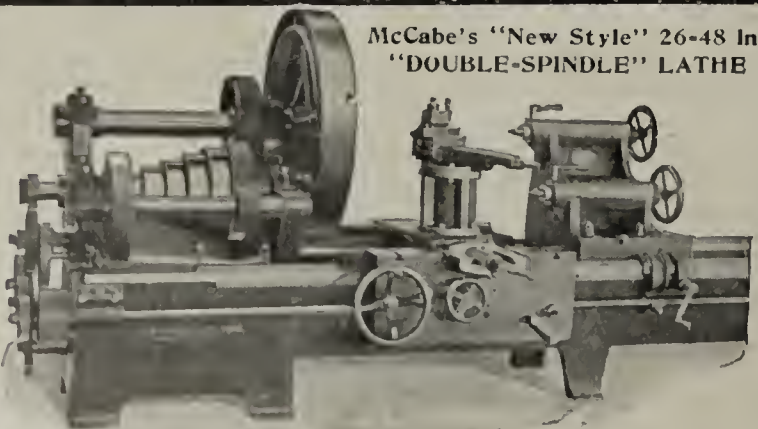
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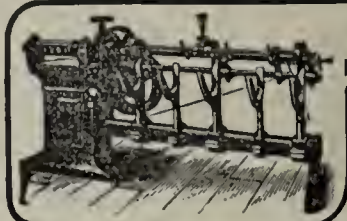


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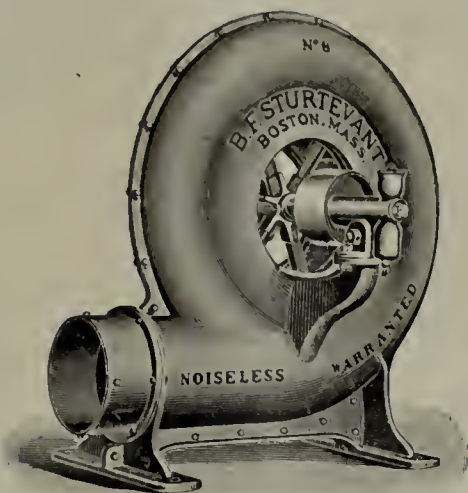
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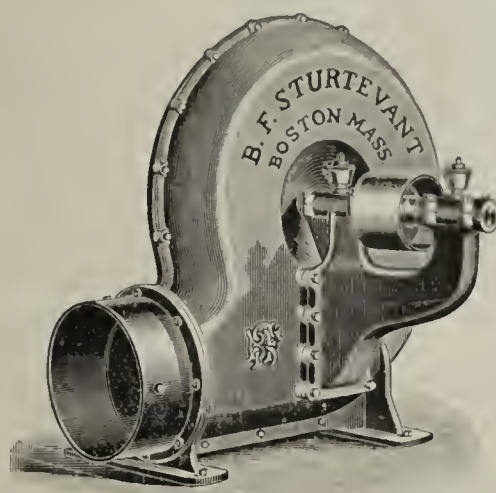
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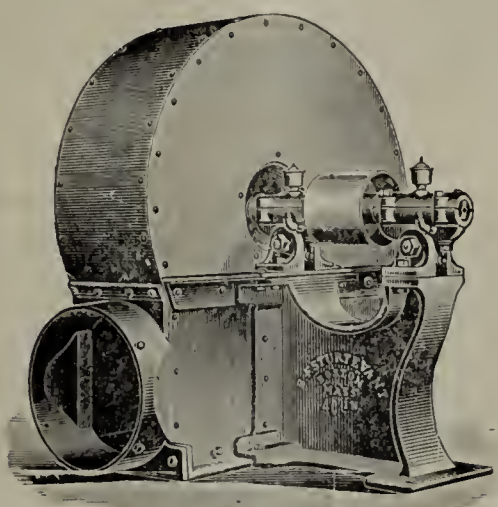
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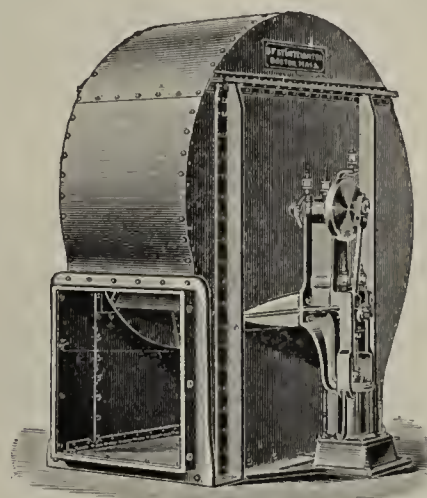
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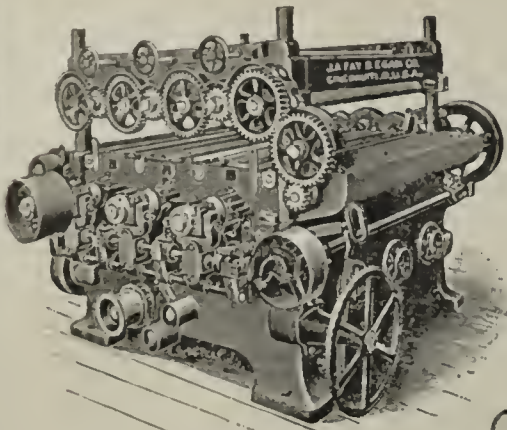
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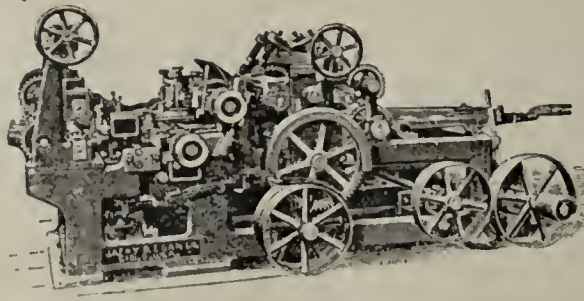
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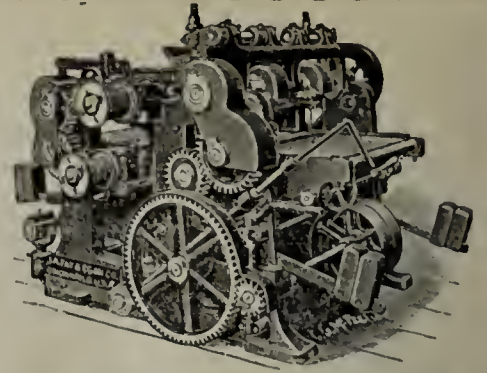
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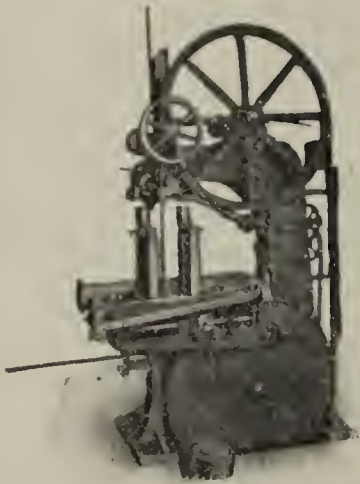
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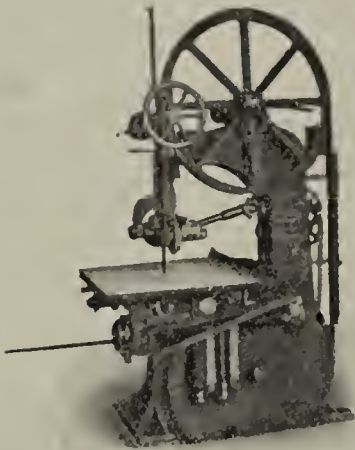
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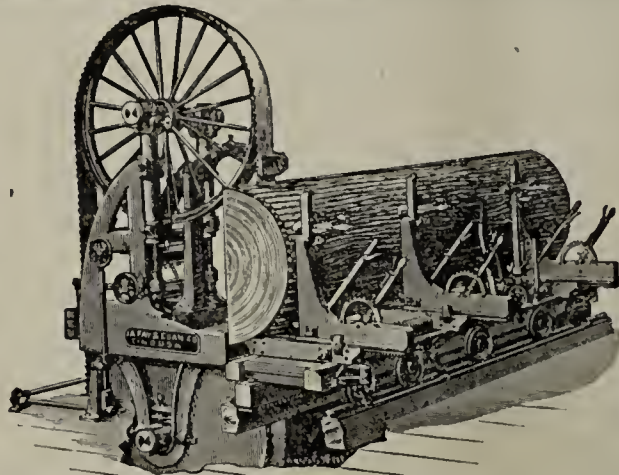
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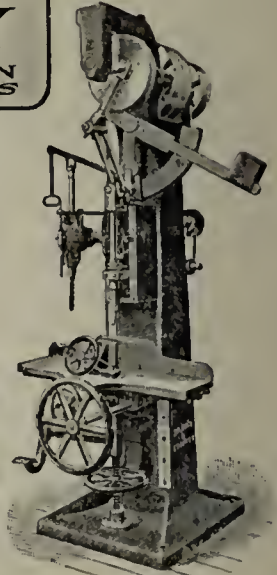
No. 146 Band Rip and Resaw.



No. 146 Band Rip and Resaw.

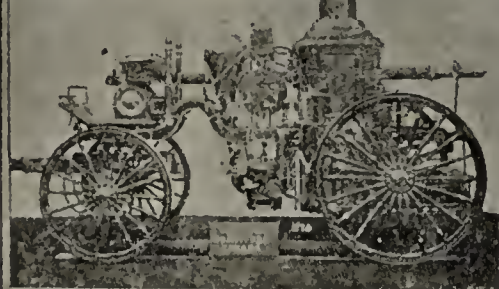


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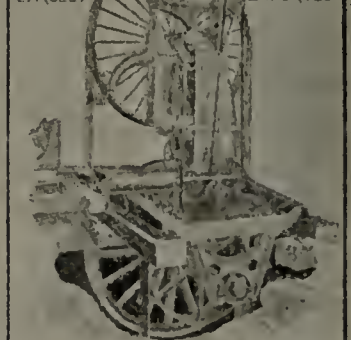
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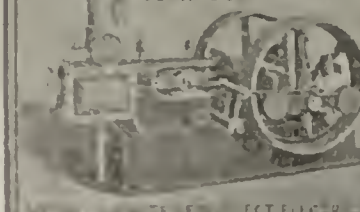


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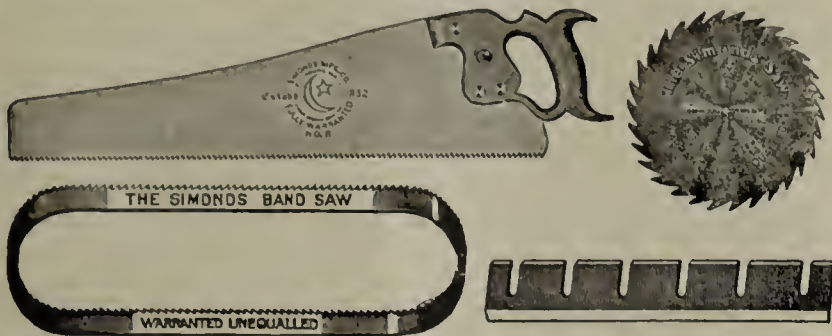
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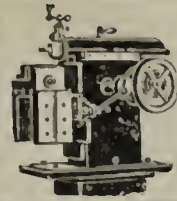
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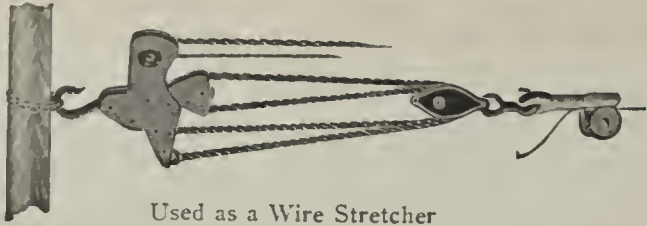
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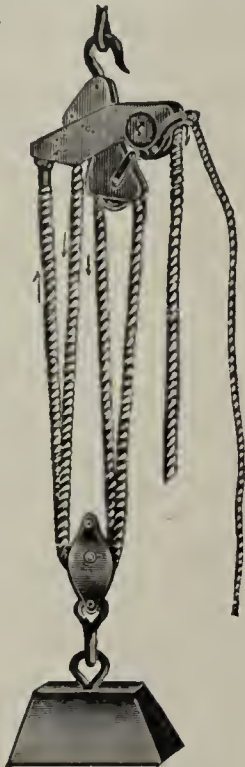
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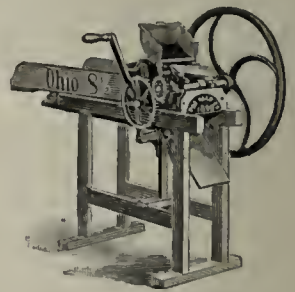
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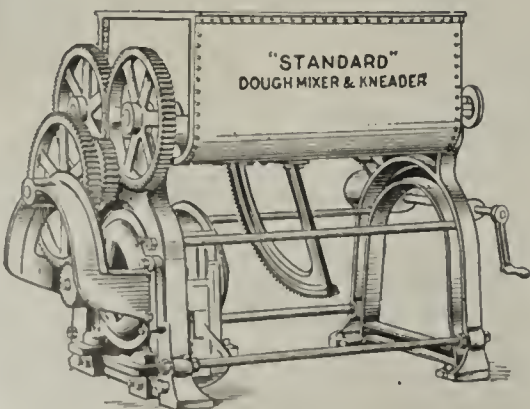
CATALOGUES IN ENGLISH.



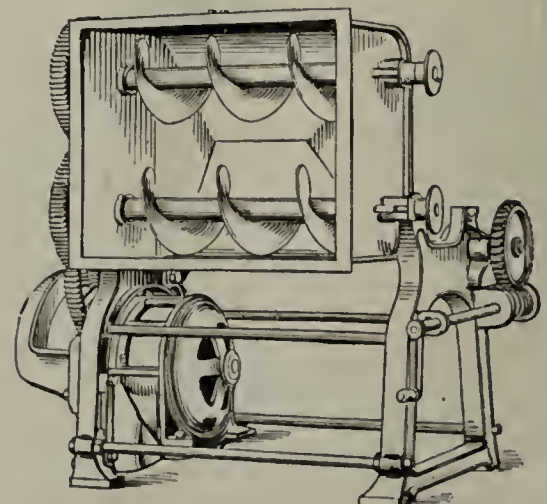
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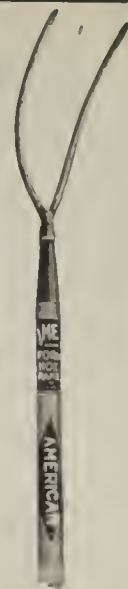
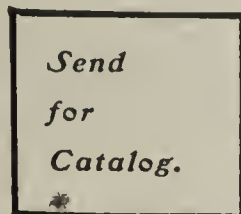


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A Perfect Substitute for Pitch

NEW JERSEY PAINT WORKS

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Remarkable Fact

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shay."



A Paint That Protects

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest
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Gold, Silver and
Bronze.



Excels on Every
Point.

Cheapest to Use in
the End.

TESTIMONIAL. NEW YORK, Aug. 8, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 6, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

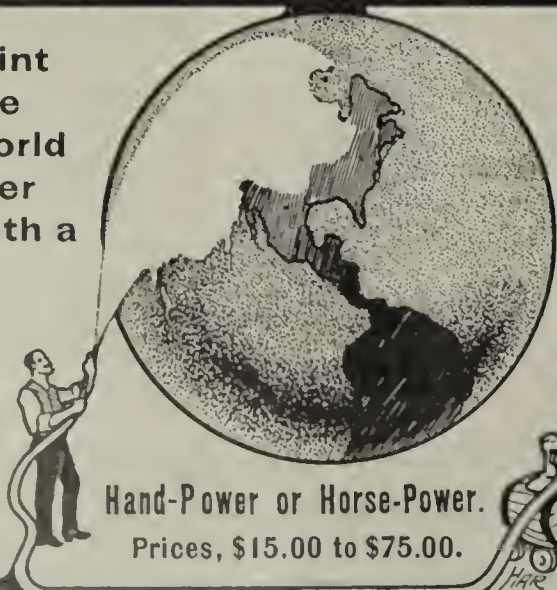
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Bright and Smooth.

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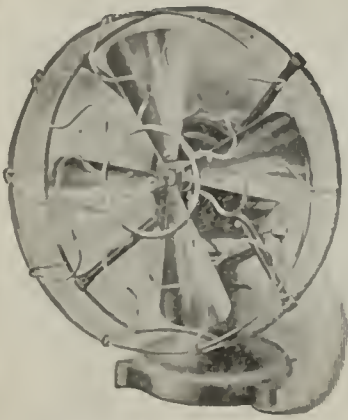
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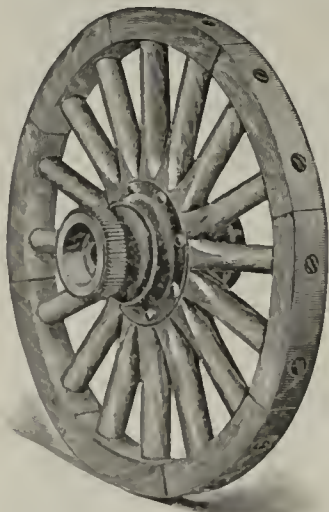
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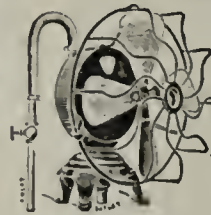
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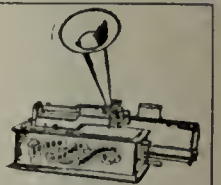
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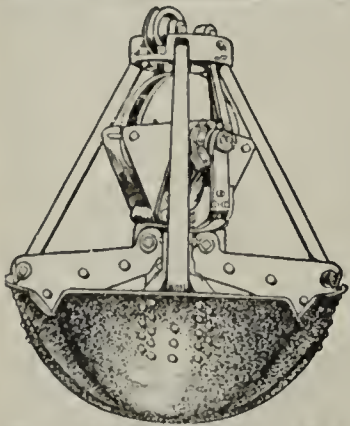
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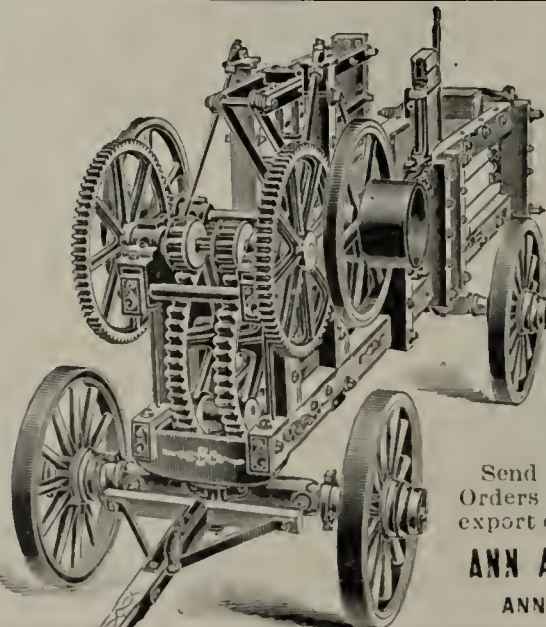
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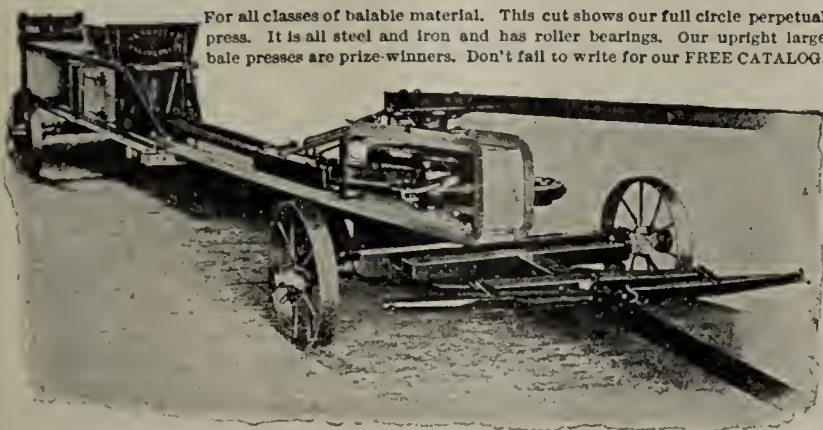
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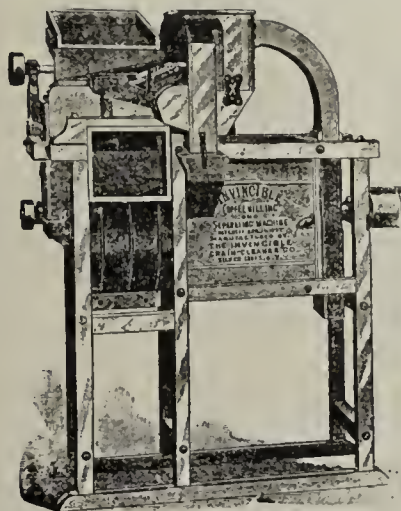
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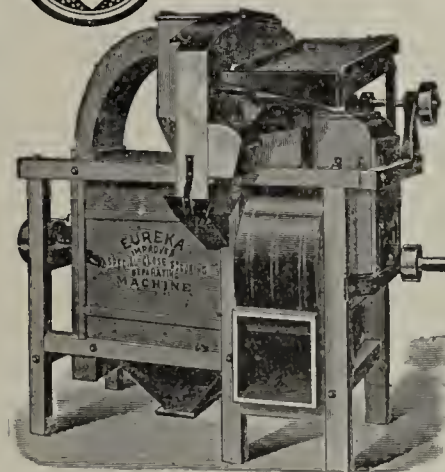
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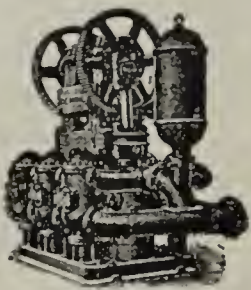
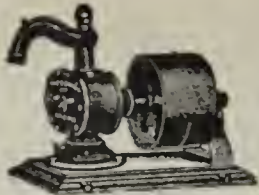
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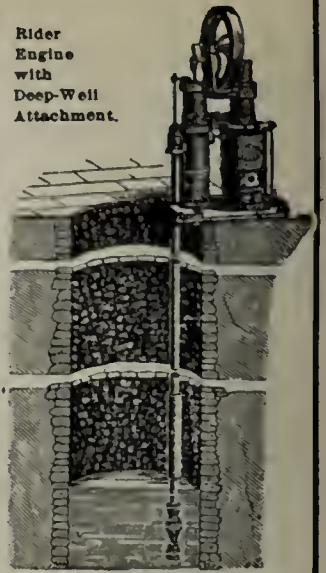
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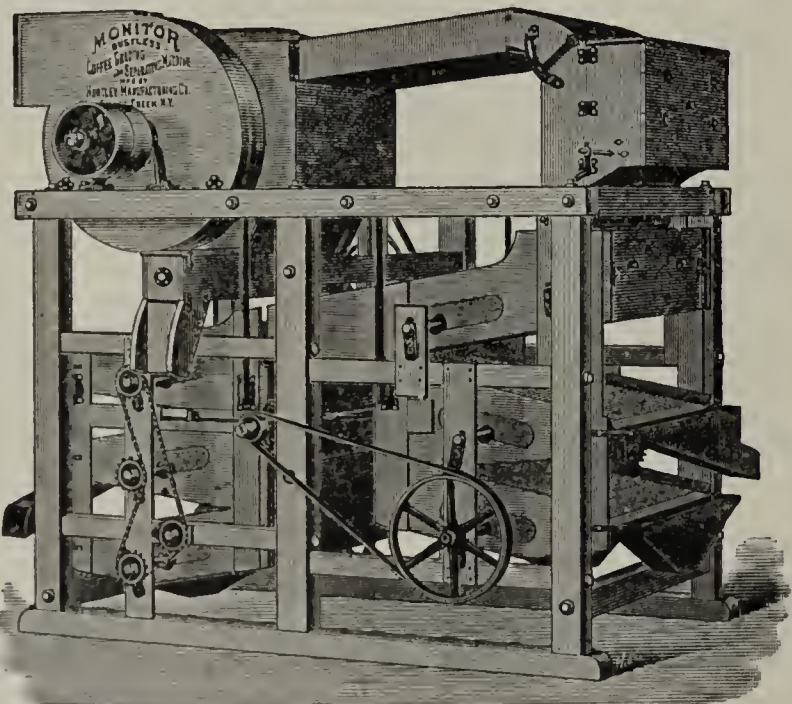
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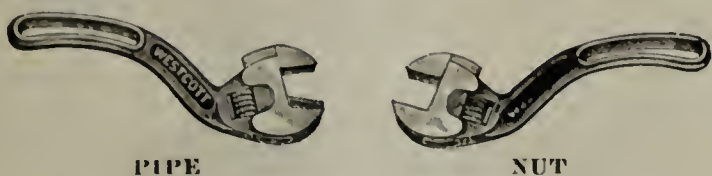
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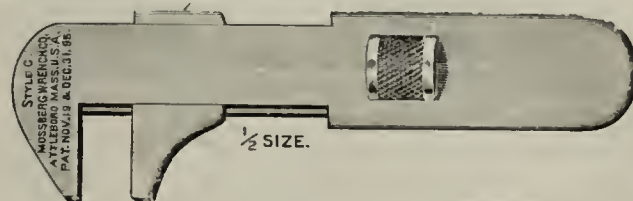
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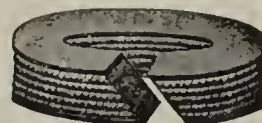
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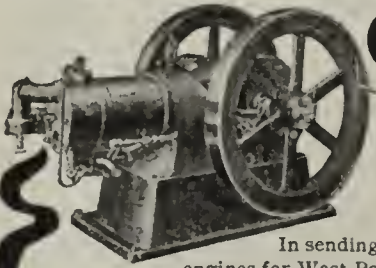
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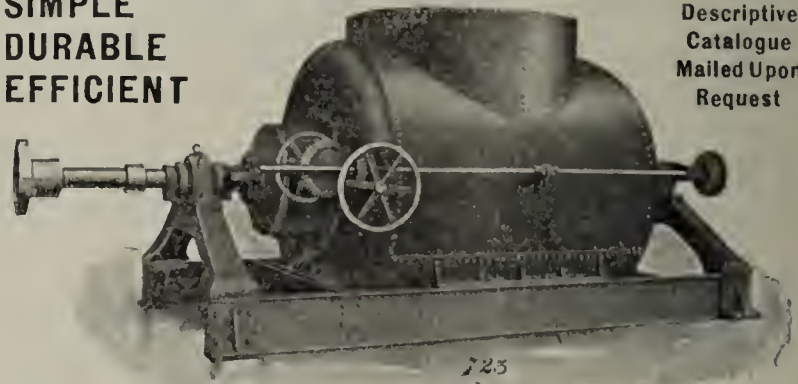
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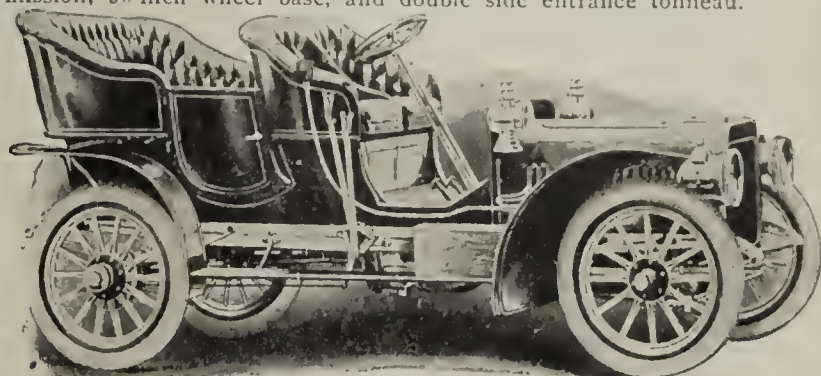
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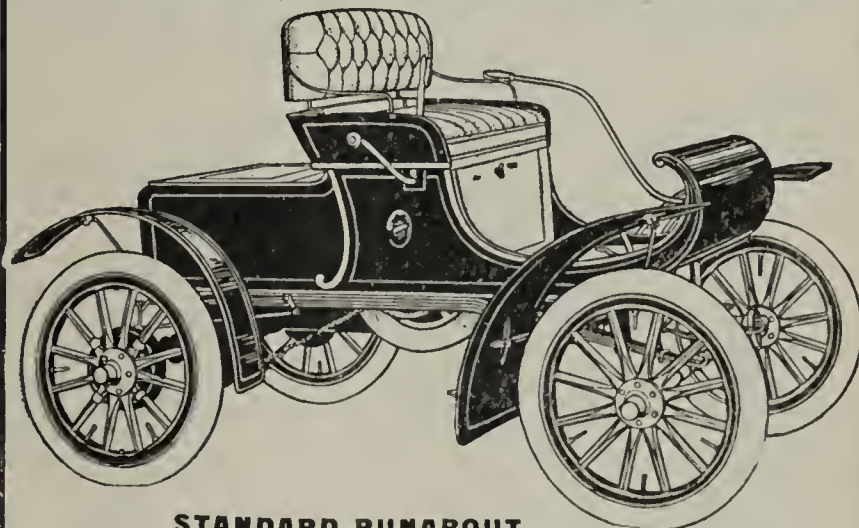
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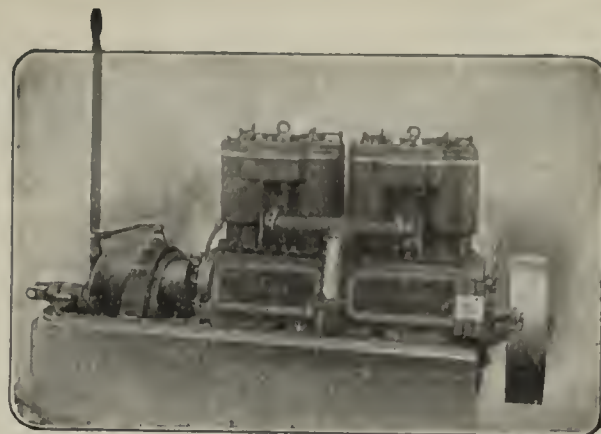
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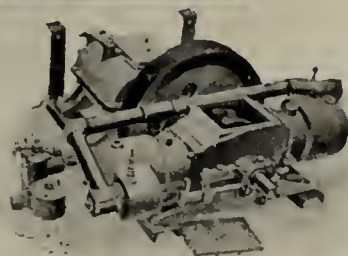
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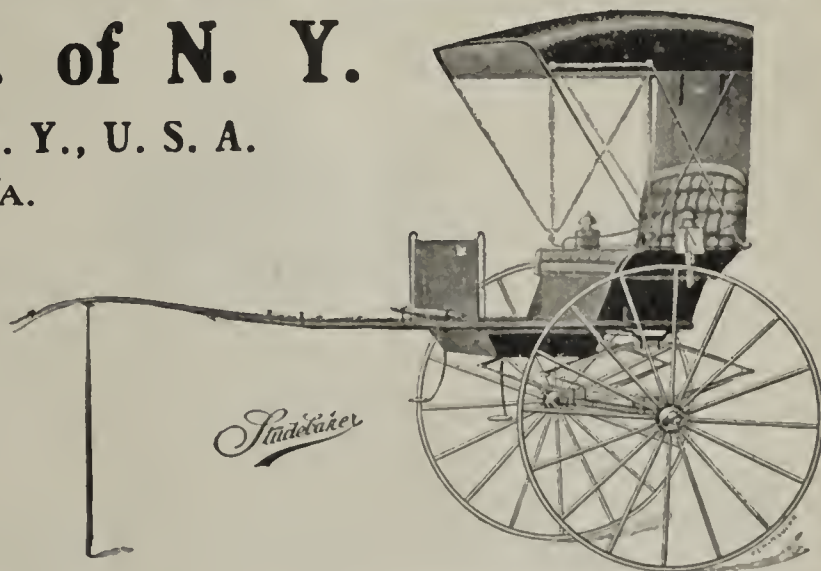
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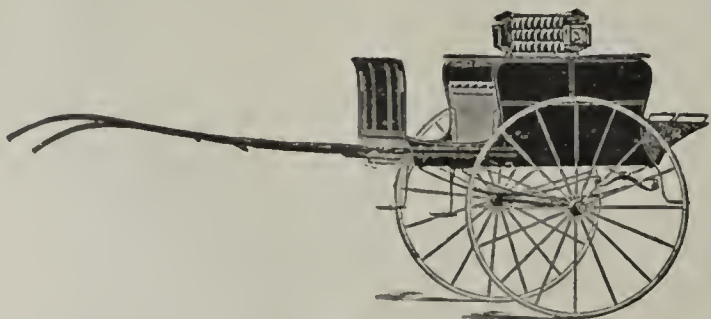
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Vol. LVI.

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The Risen Sun.

Pregnant with interest and importance is the article, which appears elsewhere in this issue of the AMERICAN EXPORTER, from the pen of Mr. W. J. Johnston, who, as our readers are all aware, is just completing a tour of the Orient. This tour is being made solely in the interest of the extension of American trade, and the tightening of the industrial bonds which have already been formed between the United States and the nations of the Orient, particularly Japan.

As a member of Secretary Taft's distinguished party, Mr. Johnston had unusual facilities for securing such information as he was in search of, and as the representative of the oldest export publication in this country, the doors of the Government offices and industrial plants were thrown open to him. Accordingly, upon his return he will be supplied with much special information regarding the industrial situation which will be at the disposal of the American manufacturers and others interested in the extension of our trade in the Orient.

Mr. Johnston's brief views of the present condition and future prospects of Japan would not be complete without some statements on the subject by a well-known Japanese whose name is a guarantee that what he says may be accepted as authoritative.

We are therefore quoting elsewhere on this important and live subject, Inazo Nitobe, a Japanese scholar and thinker. While what he says was not prepared for the AMERICAN EXPORTER, or even for presentation to the members of the Taft party, it is recent, and is based on papers written for a Japanese publication known as the *Student*, a magazine "for the study of the English language and literature." These condensations of the articles will, we believe, prove of much interest at this time not only to American manufacturers, but every one interested directly or indirectly in international trade.

A Prosperous Outlook.

The purchase of precious stones and gems has always been regarded as an indication of the prosperity of a nation, and on this score the United States must be experiencing an unprecedented career of prosperity. During the fiscal year ending June 30th, these goods to the value of \$33,223,164 passed through the New York Custom House. This is an increase over the preceding year of over 50 per cent. More than this, the indications are that the figures for the present year will outstrip those of the past period. Elsewhere there are noted some more substantial evidences of the country's prosperity. The orders for iron and steel in the United States are keeping pace with those of gems. Railroad companies are buying rails and cars with unusual liberality. The corn crop was never greater. The wheat yield is almost up to the record mark, and everywhere the outlook in the United States is very cheerful.

The Cement Age.

It is a very remarkable circumstance that the virtues of a building material, discovered and made generous use of ages and ages ago, should be fully appreciated only in our own time. There are ample evidences of the use of cement by the ancient builders, to be found in the buried cities of the East, which have been uncovered by modern scientists, and the excellent condition in which cement structures were found is eloquent testimony of the lasting qualities of this artificial stone. Buildings, in the construction of which cement was utilized, remained, while those of rock and other material have crumbled to dust. Man's work has outlasted that of nature.

The modern use of cement developed in Europe. Reinforced concrete has been extensively resorted to abroad, although the revival of the ancient art dates back within the memory of those of the present day. Ornate hotels, dwellings and bridges have been reared; warehouses of gigantic proportions and immense capacity have been given the test of time, and have demonstrated the practical value of this material. While Europe led in this particular, her reign was but short, for the United States now excels, not only in the quality of the cement itself, but in the manufacture of the machinery used in the various processes of its preparation. In the manufacture of concrete block-making machinery especially is the United States strong, and some of these machines involve the most novel and ingenious features. By their use, blocks are made of any shape or color. Some of them are so widely adjustable that all the stone work of a dwelling may be made by a single machine on the site of the proposed building. This includes not only the blocks for the wall, but posts, lintels, sills, copings, and similar architectural features.

The excellence of these machines, as well as that of the cement itself, is attested by the fact that both are extensively exported, and the industry will soon rank among the most important of those of this country.

We call attention to the articles published elsewhere in this issue of the AMERICAN EXPORTER, dealing extensively with this vital topic. The subject is treated entirely from an American standpoint, and will be found of interest not only to those likely to have use for cement and cement machinery, but readers generally, who desire to be posted on the world's progress along the industrial lines.

The Advantages of American Machinery.

Within recent years, especially the last ten years or so, the exports of American machinery have increased to a considerable extent. Especially is this the case when this country exports machinery into foreign countries which have a well developed industry of their own in that line, such as England and Germany.

It is very pertinent, therefore, to ask what is the reason why American machinery has been able to supplant the machines made in the other countries, and has been able, so to speak, to supply a want which existed there.

In the first place, of course, the exports started with those of machinery destined for some special purpose, such as sewing machines and agricultural machinery. These were the product of an industry which on account of satisfying a peculiar and great demand for such articles in the United States, had become developed to a very large extent. The peculiar conditions which had to be met in this

country, among the principal of which was the greatest possible saving of hand labor and its replacement by mechanically operated contrivances, had led to the establishment of very specialized works especially in that line. The demand for the same kind of machinery seems to have existed over there, but for some reason or other, owing to the conservative way in which business is conducted, especially in the European countries, it did not seem to have been recognized, and nothing was done to satisfy it. When, however, American machinery appeared upon the market, and its advantages became known, it was soon apparent that there was a considerable demand for such types of machines.

The same thing is true of all kinds of wood and metal working machinery which are also in this country constructed with a view of saving hand labor. The problem presenting itself before the manufacturer in this country was then to construct these machines as simply as possible so that it was not necessary to apply a high grade of skilled labor to run them. Moreover, their construction had to be such that two or more machines could be superintended by one workman and the latter's time could be utilized to the fullest possible advantage. This necessity of carrying the saving of labor to the extreme in the operation of all kinds of wood and metal working machinery was not so forcibly presented before the foreign manufacturers, and if they recognized it, they seemed to have lacked the necessary push and determination to devise ways and means for meeting it. The above qualities of the American machinery soon received recognition from the buyer abroad and led to a careful investigation of the subject on the part of the manufacturers.

Apart from the simplicity of the machinery itself, the American manufacturers also pay a great deal of attention to the elimination of all superfluous material, in order to make the machinery as light as can be done consistent with the necessary constructional strength which it has to have in order to perform its work properly and to prevent delays from break-down. Machinery built abroad and especially in England is apt to be quite bulky and to contain a great deal of unnecessary material, inasmuch as the parts are generally made stronger than necessary. This matter of lightness of machinery is, of course, one which would recommend itself especially to importers, owing to the cutting down of the weight.

Another, and not the least one, among the advantages that American machinery is generally conceded to possess, is in the construction of the parts to facilitate duplication in case of their break-down. As mentioned above, the aim has been in the first place to construct the machines so that they would have as few parts as possible, and therefore it was not a very great task to construct these comparatively few parts in such a manner that duplicates could be easily supplied at any time.

This system has the further advantage that spare parts can be easily kept on hand ready for any emergency. The above named advantages coupled with others which bear mostly upon the production of standard sizes, go far toward explaining the favor with which American machinery of all kinds is regarded in foreign countries. In the construction of their machines, the manufacturers were not primarily thinking about the export business, but rather of the utmost simplification and standardization, yet the qualities thus secured were such as to recommend the machinery especially to exporters.

LAND OF THE RISEN SUN.

Review of the Industrial Situation in Japan.

By W. J. JOHNSTON.

Five years ago, on my way around the world, I spent about six months in the Hawaiian Islands, Japan, Formosa, Korea, China and the Philippines, about one-third of the time being devoted to Japan.

On my arrival at Yokohama on that occasion I had the pleasure of being entertained at dinner by a number of well-known American business men resident in Japan, each of whom discussed for my benefit some particular phase of Japanese commercial life and practice. Afterward, through interviews with prominent native merchants and otherwise, I endeavored to familiarize myself with conditions as they then existed in the land of the Mikado.

Recently, as a member of Secretary Taft's party, which, while on its way to the Philippines, was for a strenuous week the guests of the Japanese Government, and incidentally of several provincial governors and municipalities, I had the privilege of a glimpse of the Japan of to-day which is not accorded the usual visitor.

From statesmen and others who are "doing things" in the little island empire, which is now so much in the public gaze, I learned at first hands what in their opinion the future has in store for Japan, Korea, Manchuria and China, particularly in the line of industrial development and trade relations of these countries with the United States.

I find from these conversations and from observation that the rulers of Japan realize that the successful prosecution of the war does not of itself make their country a great nation—that it is industrial achievement that counts. The Japanese wish—to put the matter succinctly and diplomatically—to maintain order and to develop the material resources of Korea and Manchuria first, and eventually of China. That is to say, Japan's ambition is to be the dominant influence in the Orient, on the ground that this will make way for international peace.

Honor in Business.

In the words of Count R. Okuma, the Liberal leader, the Gladstone of Japan: "In the future, Japan must take upon herself the responsibilities of preserving peace in the Far East; must serve as a bulwark for the peace of the world. This is her mission; an inevitable mission arising from her geographical position." The members of the Japanese Government consider that first of all the mines and other resources of the Oriental countries should be developed, and that the investment of American and British capital for this purpose should be encouraged by wise and liberal provisions of law.

On the occasion of my previous visit to Japan, five years ago, the feeling was general that Japanese merchants were inclined to take advantage of foreigners, and that in granting credit one had to be extremely careful. I am glad to say that this idea no longer prevails in Japan. Under the old régime a merchant or trader was practically at the bottom of the social ladder and had largely lost his self-respect. The present Mikado, however, has done much to elevate trade, and the Government has instilled into the minds of Japanese merchants the necessity of keeping their credit good. The "bantos" or middlemen apparently were largely responsible for the bad name acquired by the Japanese. These bantos are now being

eliminated from commercial transactions. To-day the importers and dealers say that the Japanese merchant is as worthy of credit as is the merchant of any other country. *The losses in bad debts are inconsiderable. I learned that the Standard Oil Company, which for the past decade has done an annual business in Japan of about \$10,000,000, and gives from thirty to sixty days' credit, has lost in bad debts during all that time but \$75.*

Japan's Next Conflict.

There is no question in my mind that the Orient now offers a better market for American goods than it ever has before. Recollect, if you please, that it is but fifty years since Commodore Perry opened up Japan to foreign trade. What other nation in the world's history has within a like period made such rapid strides? The war has demonstrated both to themselves and to the world the capacity of the Japanese for organization and for action. Their next conflict will undoubtedly be of a commercial character.

One thing I wish to impress upon American manufacturers is that it is no longer the Land of the Rising Sun—it is the Land of the Risen Sun. After the war the Japanese will have more wants than they had in the past, and they will look to America to supply a large part of these wants. Japan will certainly at all events greatly influence the trade of the Orient, but she is committed to the policy of the "open door."

Marquis Ito, in commenting upon this, said to me, naïvely: "We are not afraid of the competition of other countries." In other words, when Japan is ready she expects to supply not only her own home market but Korea, Manchuria and China with most of what they buy of the line of goods which she manufactures; her geographical position being much in her favor in that regard. It seems to me, though, that it will be some time before she will be prepared to properly handle this trade. She will need capital, for one thing, and skilled mechanics in greater number than will be likely to be available for some years to come.

AMERICANISM IN THE EAST.

By INAZO NITOE, OF JAPAN.

A newly coined phrase—"the Americanization of the world"—is afloat in the air. Though it found its most definite spokesman in Mr. Stead, the tendency which it denotes has become visible and audible in many quarters of human activity. The world tendency is American. We cannot get rid of this fact. We see it in industries, in education, in social manners and in human thoughts.

Only twenty years ago few dreamed of America as a land of art and science, of literature and philosophy. We could not reconcile cities of a few decades' growth with collections of ancient art, or even with modern masterpieces. We believed that the Muses would not inspire a nation so earnestly bent upon earthly welfare. We thought philosophy would scorn democracy. But the case proved otherwise. The great Republic is appropriating all the gifts which grace human existence; it is making the world its very own.

Launch of the Japanese Ship of State.

Japan could not refuse the advances of the United States. She had many, many times repulsed the overtures of other nations, but when the time came for America to represent the world spirit we could no longer reject it. To have done so

would have meant disaster to us, if not ruin. We glory in the thought we have been divinely guided at every momentous turning point of our career. At no time, however, has the guiding hand of Providence been more manifest than it was fifty years ago, upon the occasion of Perry's expedition to our shores. It was then that our Ship of State launched into the world current, that we ourselves became an integral part of the modern world. We represent in the Far East what may be called American ideals, or, if you prefer to call it so, Anglo-Saxon ideas.

Wherever American influences have found their way, be it among the savage Indians or the negroes; be it in the semi-barbarous Hawaiian Islands or in the Philippines, or be it in the Far Eastern seats of alien and ancient civilization, they have been mainly educational, and these educational influences have even existed not unconsciously as a necessary consequence of a policy uneducational in its motive; but, consciously and primarily, Columbia is the greatest schoolmistress the world has ever seen. She knows how to *educate*—that is, how to draw out the best in men.

A few years prior to Perry's arrival in Japan, Creasy prophesied changes of vast magnitude would be wrought by the advance of American power in the Pacific, and even a generation before the English historian wrote, Crawford expressed a presentiment that the United States would open Japan and China. Seward, too, foretold that "the Pacific Ocean, its shores, its islands, and the vast regions beyond, will become the chief theater of events in the world's great hereafter."

Triumphs of Wisdom, Persistency and Patriotism.

All these prophecies have been fulfilled by the hand of America in the short period of half a century. But nowhere has American enterprise borne more fruit than among us. Only lately has the greatest American authority on diplomacy voiced the satisfaction of his people. Says Mr. Foster in his new work on "American Diplomacy in the Orient": "It is especially gratifying to Americans to note the triumphs of Japanese wisdom, persistency and patriotism—to feel that they were instrumental in awakening that people to the high ideal which they fixed for themselves, and that they have stood by them as their adviser and friend in their long struggle for regeneration and independence."

It is a matter of happy augury that the waters which lave the shores of the two countries were named *Peace*. May it bind the two nations in still closer ties of friendship!

This year we have celebrated the golden wedding of America and Japan, and when, twenty-five years hence, the diamond wedding comes, may we and our sons and daughters not only rejoice at the good will between the two nations, but may we also invite the other nations to our banquet spread in the blessing of peace and friendship!

THE BATTLES OF PEACE.

BY INAZO NITOE, OF JAPAN.

Post-bellum work will call for the best intellect of our race and its highest exertions. How shall we pay back the money we have borrowed to carry on the war? What must we do for the thousands of families left fatherless and widowed? Wherewith shall we reward the brave ones who shed their blood or who returned maimed and crippled? In what ways ought we to prepare for new conflict with new enemies? The

present army and navy have to take charge of half a million, or at most a million men. The post-bellum battles of peace will involve our fifty millions of men, women and children. The army and navy have to command only men, and these the same order of men. The post-bellum leaders must control all sorts and conditions of men, and these, men who cannot be ordered about.

When I think of the mighty task which remains for us to do after the war, the deafening sound of *banzai* dies in the distance, and the glaring torches pale away.

A few points must ever be kept before us as we study in our closets in these times of great excitement.

The settlement of Korea must elicit due attention from us. A poor effeminate people with no political instinct, with no economic "gumption," with no intellectual ambition, is become the brown Japanese man's burden. Something must be done to resurrect a dead nation. Statesmen alone cannot do it. Teachers and agriculturists, preachers and engineers, can work more wonders than diplomats and generals.

Debt Worse than Invasion.

The money we borrowed must be returned with interest. We need, besides, money for new works of divers kinds. Foreign loans may be more fatal to the independence of a nation than an invading army. No debt of ours can be paid without the products of our own soil, be they mineral wealth or manufactured articles. The development of our physical resources is a question of national life or death. New mines must be discovered, or old ones better utilized; foundries must be established to work iron, copper, steel for home use; factories must be started to weave silk, cotton, wool for foreign export; the soil must be more deeply plowed, and virgin land opened; bare mountain slopes must be planted with more trees and grassy plains turned into pastures for more cattle.

As our industries advance, so must our trade with the rest of the world augment. As we shall have more to sell, so must we order more things from abroad. As our commerce grows, so must we increase our merchant marine. We must have more ships, larger, swifter and better than we used to have. As navigation of our coasts and rivers improves, our land communications must keep pace with it. We cannot be moving at a half or a third of the rate of American velocity.

Must Know the West.

The closer touch with Europe and America, through diplomacy or commerce, necessitates better acquaintance with the languages of the West, and especially with English, the most common medium of international mercantile dealings.

The more intimate our communication with the West, the freer must be the interchange of our ideas. We must know the West better, and we must be better known. There is still a wretched misunderstanding between the East and the West. A thick barrier stands between the two, which unprejudiced study of each other alone can penetrate.

There have been in history nations that became great by war, but greatness so won is never enduring. A nation's lasting happiness comes only by peace. Success in war is but a small beginning of the greater work of economic prosperity, which in turn is but a means to a closer bond of nations, the last being itself only a step toward the realization of the Golden Age when men shall no longer regard their brother men as enemies on the field of battle or in the marts of commerce.

THE CEMENT AGE.

REVIEW OF THE CONCRETE INDUSTRY FROM THE AMERICAN STANDPOINT.

That concrete, as a building material, is more lasting than stone, is a fact vouched for by the presence of structures of this material reared by the ancient Romans which are standing to-day. In the meantime, natural stone structures have gone into decay. It seems marvelous that the virtues of this material, recognized in those remote times, should be so neglected by the world's builders for ages, as it has been only of recent years that concrete has been given the attention that it is worthy of. Now we are on the threshold of a concrete age. This plastic material, with a banding of slender wires and rods, is being used in the construction of great factories, the floors of which are designed to

support tons of machinery and hundreds of workmen. It is equally available for dwellings which can be made on lines severely plain or ornately decorative, according to the taste of the builder. Stone can be imitated so closely that only a very critical examination, when the cement is fresh in place, will reveal the imposition. After years the difference will be more apparent for the reason that time's ravages will be evident on the stone, while the cement will be superior in strength and appearance, if it has been prepared carefully. Tower-

ing chimneys built of reinforced concrete are as strong as stone with additional advantages, notably economy of space and rapidity of construction. Dams and dykes are being constructed of gigantic proportions, and it is contemplated that they will be everlasting.

As a fire-barrier, steel and concrete, in combination with wire-glass, is said, by the foremost authorities, to form an absolute check against the progress of any conflagration. The behavior of concrete in many of the recent conflagrations has demonstrated its sturdy qualities in this particular. In many instances steel, brick and terra-cotta have failed signally, while reinforced concrete stood, unscathed by the fiery baptism.

Until recently the progress of the art was more advanced abroad than in the United States, and it is a significant fact, in this connection, that the Portland cement of Europe was once the standard demanded by builders, whereas the American Portland cement has of recent years become so improved by exhaustive and expensive experiments, that it is now conceded to be superior in every way to the foreign product. The best demonstration of this is the rapid strides made by the American cement industry in recent years. In 1890 the output amounted to 300,000 barrels, while in 1893 it had jumped to 21,000,000 barrels.

In the search which has been going on for years to find a

satisfactory fire-proof composition for construction, all the materials offered by nature have been tried with but indifferent success, and it seems strange that an artificial product should be found to fill the bill so perfectly as concrete. There is probably no greater authority on matters of this kind than Edward Atkinson, of Boston, and we reprint herewith from a recent issue of *Cement Age*, Mr. Atkinson's words about the fire-proof qualities of concrete construction, as a result of his investigations of the Baltimore fire:

"Well - made

concrete encasing steel proves to be most fully a fire resistant, when it is made with true Portland cement, rammed and tamped in a proper manner. It fortunately happens that a well-made concrete of this kind is subject to a law of expansion and contraction under heat so nearly identical with that of steel as to assure its position being maintained under high and varying temperatures. It will be remarked that the temperature in this conflagration must have reached a higher point in many of the buildings of ordinary construction than it did in the steel-framed buildings. In the former, many examples of melted iron and steel were found; in the latter, few traces of a temperature reaching these melting points."

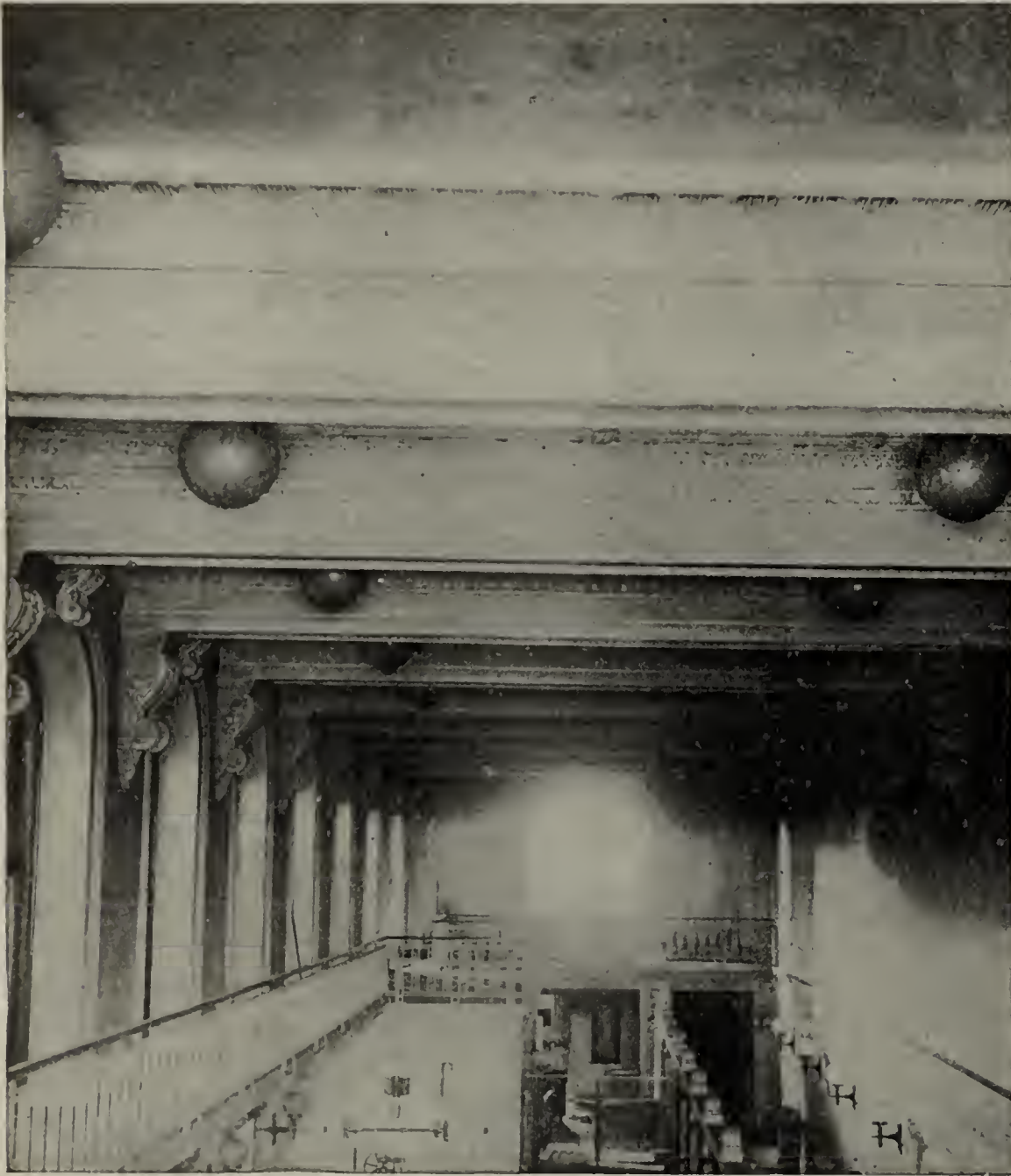


FIRE-RESISTING QUALITIES OF CONCRETE CONTRASTED WITH STEEL.

Tested by Fire.

Laboratory tests were for a long time relied on necessarily by engineers for their data as to the behavior of different materials, when subjected to intense heat, but this was never quite satisfactory, for obvious reasons. Recent conflagrations, where the action of concrete was to be observed

make a comparison of the fire-resisting qualities of concrete and brick. The lower part of the building, in which the banking institution was housed, was of concrete. The ceiling of the banking-room was of this construction. Above this ceiling the building was a wreck, while beneath no damage had been sustained whatever. The steel and concrete combination at this point formed a very effective barrier against the further progress of the flames.



LOWER PART OF COMMERCIAL AND FARMERS' BANK AFTER FIRE.
BUILT OF CONCRETE.

beside other building materials, afforded the most practical demonstrations of its qualities. At the Baltimore fire, for instance, there were to be found specimens of concrete construction of different systems standing beside terra-cotta, brick, iron and steel. In some instances different constructions were to be found in the same building, so that here the different materials must have been subjected to the same experience. In almost every instance such comparisons offered eloquent testimony in behalf of the concrete. A notable case in point was a four-story structure which had been built of concrete beams, pillars and floors, with walls of terra-cotta. In this case the terra-cotta was demolished by the action of the heat and fell to the ground, leaving the concrete portion standing. This part of the structure was found to have sustained no serious damage, and was made use of in the reconstruction of the building.

The experience of the building of the Commercial and Farmers' Bank during this conflagration offers an excellent opportunity to

Concrete in the New York Subway.

The subway extending the length of New York City is a monument to the use of concrete. This gigantic piece of work, over twenty-four miles in length, was constructed and completed on schedule time, in itself a remarkable achievement, when one takes into consideration the delays which are constantly being encountered in the building work generally. According to the Deputy Chief Engineer, George W. Rice, of the Rapid Transit Commission, this performance was made possible only by the use of concrete. In an article prepared for the *Cement Age*, Mr. Rice said:

"The use of concrete has been beneficial not only in reducing the cost of the work, but in these times of labor troubles, it has allowed the use of unskilled labor in the carrying on of the work, and has to a large extent rendered the contractors independent of the bricklayers and other classes of skilled labor. Under competent superintendence the forms can be set and the concrete placed in position with the cheapest kind of labor, and with a certainty of good work if the materials are properly manipulated."

One noticeable innovation in the use of concrete is its application in the stations where the light is obtained by using concrete reinforced with steel rods and supporting glass cylinders, which light portions of the stations during the day and conversely light up the sidewalk by night by having the light show through from underneath the sidewalks. In fact, the whole of the Rapid Transit Railroad is based on concrete construction as far as is possible. When it is considered that in the construction of this work, lasting for a term of a little over four years, and that after a very careful inspection, no defects in the concrete construction have ever been found.

Wall Moved Bodily.

An instance of the extreme mobility of this character of construction is demonstrated by a circumstance during the progress of the subway. It happened that during the construction of the work a change was made in the plans whereby the accommodations of a portion of the subway were increased, by making a two-track into a three-track subway at the request of the operating and contracting parties. A small portion of this work had already been constructed along the old lines when the contractor made this

request for the change. This necessitated the taking down of a portion of the work which happened to be a two-track arch span of about 25 feet in width. When the work of taking this down was begun the integrity and excellent character of the materials were plainly evident. One very interesting feature in connection with this change was the keeping intact of a portion of the two-track steel concrete subway near 135th street. This part had been constructed for a short distance when the change was decided upon, and it was found it would be less expensive and more advantageous to cut this two-track subway apart, move the separate portions and build in a portion for the three-track. This was done by severing one side at the top and bottom and moving that part in one direction while sliding bodily the remaining top and side portion in the opposite direction. This was very ingeniously and successfully accomplished, and shows that a masonry and steel structure which has been constructed properly in the first place, although being mutilated in several parts, can still be utilized.

Hand and Machine Mixing.

Cement was developed because the mason needed a mortar that would set beneath water, and because they wanted a mortar that would be durable when attacked by the elements. The ancients discovered that if clay was burned and ground to a fine powder, it could be mixed with lime, and had the faculty of hardening when completely immersed by water. This was the beginning of the manufacture of hydraulic mortar.

The mixing of cement is a very important matter, and different builders generally have their own formulas. In a pamphlet issued by the Municipal Engineering and Contracting Company, of Chicago, Ill., this is touched upon as follows:

"In hand-mixing there are two methods largely followed. Engineers often specify that the sand should be spread out on a board platform, and leveled over so that the depth will be three or four inches. Over this is spread the sand with a hoe, and enough of the material is thrown from the middle of the pile to leave the sand and cement in a ring. The water is put in the center, and with hoes and shovels the cement is turned over and over, and the water incorporated with them till a thin paste is formed. The broken stone, which has previously been dampened, is thrown into this mass, and again turned over till the particles of stone are entirely covered with cement."

This method is somewhat slow, and the way in which the contractors hurry the mixing of sand and cement does not always produce a good mixture. The specifications generally say that the mixing must continue until the color is uniform before the water is added, but a saving clause is generally inserted to the effect that "the mass must be turned over dry not less than twice."

Another way that is generally followed by contractors when doing work for which no specifications have been prepared, and a method that is sometimes specified by engineers, is to spread the stone on a platform as many inches in depth as there are parts of stone in the mixture; then place on this sand as many inches deep as there are parts of sand in the mixture, and spread over the sand the cement.

The old way of mixing concrete was to put in as little water as would hold the cement-mortar together. This is what is known as a dry method of concrete mixing. In this method, if a handful of concrete is taken up it will retain its shape as the hand is opened, but will not be wet in appearance. Such concrete is generally deposited in place, tamped very thoroughly until the excess of moisture is driven to the top, and the mass becomes quaky. Up to twelve or fifteen years ago, this was the only method, and it has been found by careful experiments that the wet process is just as satisfactory, and the cement is much easier to apply. The dry method is used only where special requirements make it necessary. All contractors who advocate wet mixtures have their preference for some particular degree of moisture. Contractors claim that in a wet mixture the material



UPPER PART OF COMMERCIAL AND FARMERS' BANK AFTER FIRE.
BUILT OF BRICK AND IRON.

will require less tamping, and will produce a better surface. It is also believed by a great many contractors that there is considerable labor saved when mixing the concrete wet. Other authorities dispute this and say that an excess of water simply gives

the concrete a well-mixed appearance. They claim that it is only possible to get a thorough mixture by hand, and by using the dry method. Hand-mixing is being rapidly supplanted by machine-mixing, and there are a number of machines on the market to do this work. In some of them there is the method of shovel action, the tank being supplied with deflectors of different form and size to produce the same effect as a shovel in moving through a wet mass.

A very little thought will convince one that the mixing of concrete by hand is a matter of chance, largely, for the materials are taken up and thrown around in a haphazard manner, so that in order to get a thorough mixture a great deal of time should be employed. This, of course, makes mixing expensive, and is an argument in favor of the machinery.

Concrete Block Machinery.

The first concrete dwelling constructed in America was built in 1877 by W. E. Ward, at Portchester, N. Y., and it stands to-day as sound in every respect as upon its completion. In 1889 Franklin W. Smith built at Saratoga, N. Y., a villa constructed of Portland cement which was designed on the lines of some of the ancient structures of Rome, and it was watched with interest



RESIDENCE MADE OF CEMENT BLOCK.

for many years by persons employed in this industry, and no fault whatever could be found with the behavior of the material.

Another interesting specimen of concrete structure was one of the earliest of this country, that of the Stanford University, at Palo Alto, Cal. This structure is 300 feet in length, three stories high, and from the foundation to the roof it is built entirely of concrete.

St. James Church, in Brooklyn, N. Y., also a concrete structure, covers an area of 110,000 square feet, and has four gables sixty feet high, and an eighty-foot tower. It has the exterior appearance of regular granite, and from the standpoint of durability, it has been acknowledged to be superior to a similar structure not far away, which was built of stone, and cost three times greater.

A few months ago an unofficial survey of the concrete block machinery field revealed the fact that there were about 250 firms in this country engaged in manufacturing machines of one form or another, for the purpose of making building blocks of this material. Each one of these has some distinguishing character-

istic, but in principle they are much the same. The block machine is merely an arrangement of parts designed to hold the concrete in the desired shape while it is tamped and dried sufficiently to hold its form prior to removal for final seasoning. With such a machine it is possible for a few unskilled workmen to throw up a very imposing dwelling at a very low cost. In fact, if time is no consideration, the thing might be accomplished without the machine. Any sort of a mold strong enough to stand the tamping operation would answer all purposes. The function of the block-forming machine is to make the blocks uniformly and quickly.

Some of these machines are adjustable, to the end that a variety of faces and sizes may be obtained. A house built of artificial stones, all of the same size and face, would present an appearance very offensive to the esthetic eye because of the great regularity of the pieces. This objection is met by making the machines changeable, so that many sizes of block may be produced. The variety of facing consists of imitating the different cuts of stone, and with good material and machinery the deception is such an excellent one that it is difficult to tell nature's work from that of man.

Some of the machines are constructed so that the block is formed face downward, which permits of facing the block with somewhat finer material, and of making use of color in their manufacture. It is also possible in this manner to make the face of the block of a character to resist water. A block with a waterproof face is as good as one entirely waterproof, and more economical.

The tamping of the block is an important process. No matter what the character of the material used, the block will not be satisfactory unless the tamping operation is thoroughly cared for. Blocks, otherwise perfect in mix and mold, will be useless unless properly tamped. Light and frequent tamping, either by machine or hand, works all the air out of the mass and packs the grains of sand in the voids of the aggregates. When the mold is well filled and carefully tamped, the block is released and set aside to cure. Simple pressure does not answer the purpose of tamping, as the cement is thus formed in a compact mass at the outer edges, while the interior is soft and filled with air. Continued pressure will cause a porous formation and the block will be subject to early disintegration.

The block issuing from the machine has no more character than a piece of putty, and at this stage must be handled with great care, for a crack developing while it is still soft will never heal, and will destroy forever the value of the block.

As soon as the block has sufficient solidity to stand the treatment, it undergoes a sprinkling operation for twenty-four hours, and then it reposes for a week, covered with burlap or straw, in order that the moisture will take its departure slowly and evenly. The exterior, drying too quickly, will act as a seal and prevent the moisture from escaping from the center. After one week under cover it should be sun dried for ten days, whereupon it is ready for use.

A well-made block should have a tensile strength of 240 pounds per square inch, and a crushing strength of 1,000 to the cubic inch.

In round figures, four men and a machine will make in a day blocks which will equal 6,000 bricks wall measure. The blocks can be laid by inexperienced labor in one-third the time

required to lay the same wall-measure of brick, and with one-quarter of the mortar required for the brick.

The block machine made by the Winget Concrete Machine Company, of Columbus, O., is one which permits of a very wide



CHURCH BUILT OF CONCRETE BLOCKS.

range of adjustment. In fact, it is claimed for this machine that it will turn out a greater variety of styles, sizes and finishes than any other. Within certain limits it is possible to make blocks of any desired dimensions; not merely half, quarter or eighths, as in others, but all odd and fractional sizes that may be called for. The machine of the Winget Company will turn out a block of any length up to 32 inches, any width up to 24 inches, and any height up to 9 inches; also all special shapes required in construction, such as for porch columns or chimney flues. Lintels or sills can be made up to 38 inches.

Another of the strong points of this machine is the automatic opening and closing of the mold-box. The operation is performed by simply turning a crank. Three turns to the left forms the mold-box, making it ready to receive the material for the block; three turns to the right raises and opens the mold-box, presenting the perfectly formed product. By removing the block and placing on another pallet (off-bearing plate) the machine is again ready for operation. By the ingenious construction of the

compound gear, which is positive in its action, the work of forming the mold and releasing the finished block is very easily done by one man, and in two or three seconds of time.

This permits of the rotation of the mold-box, thus turning the front molding-plate to the bottom, and thereby making a perfect



MAKES BLOCKS OF ANY SIZE.

and simple face-down machine, while the great advantage of a rear molding surface is maintained. This provides for the making of a block consisting of concrete of different mixtures

and enables the placing on it of a rich, fine-grained facing with a cheap but strong backing of coarser material, or, in the same way, of introducing any richly colored facing material that may be desired.

For removing the block a simple device is made use of which is both adjustable and rigid and does not allow the block to swing while it is being lowered and carried away from the machine. This is especially valuable, in that it saves the breaking of many blocks.

Among the concrete block-making machines, the "Normandin," made by the Cement Machine Company, of Jackson, Mich., enjoys the distinction of having a very wide and diversified application. This machine is adjustable to a number of different sizes of blocks, as well as the different face finishes. The manufacturers claim for it that it combines the purposes of ten machines into one. This machine was shown at the St. Louis Exhibition, and received no less than two awards, one from the Department of Metallurgy and the other from the Department of Liberal Arts.

It is estimated that the cost of manufacturing blocks by this machine is about 10 cents per cubic foot, which makes the concrete block as cheap as brick. The company engages exclusively



CONCRETE BLOCKS.

in the manufacture of cement block machinery, and at the present time the plant is being operated constantly to fill the demand for its machines. Within a short time a large shipment has been made to South Africa, and another to England, which may be regarded as a demonstration that these machines are in universal use. The adjustability of the machine is secured by furnishing with each a number of interchangeable parts. There are six different designs furnished with each machine, and a durable door, besides two designs for a circular attachment, and three for presenting different surfaces as may be desired; three of rock face, one of chisel, one plain and one panel.

In the operation of the "Normandin" machine, one movement of the lever raises or lowers the cores. One operation unlocks and opens or locks and closes all sides and the end of the mold, formed for either straight or corner blocks. The lifting fork can be turned either by hand or crank, which facilitates the handling of blocks, saves time and inconvenience.

The government at the present time is using "Normandin" blocks at the government testing station in Massachusetts and other points; several railroad companies have also adopted them.

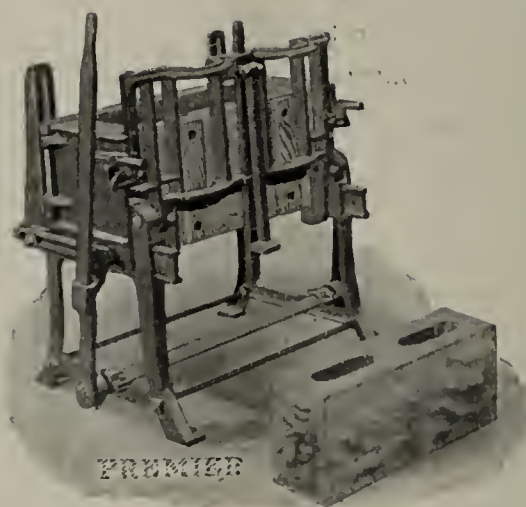
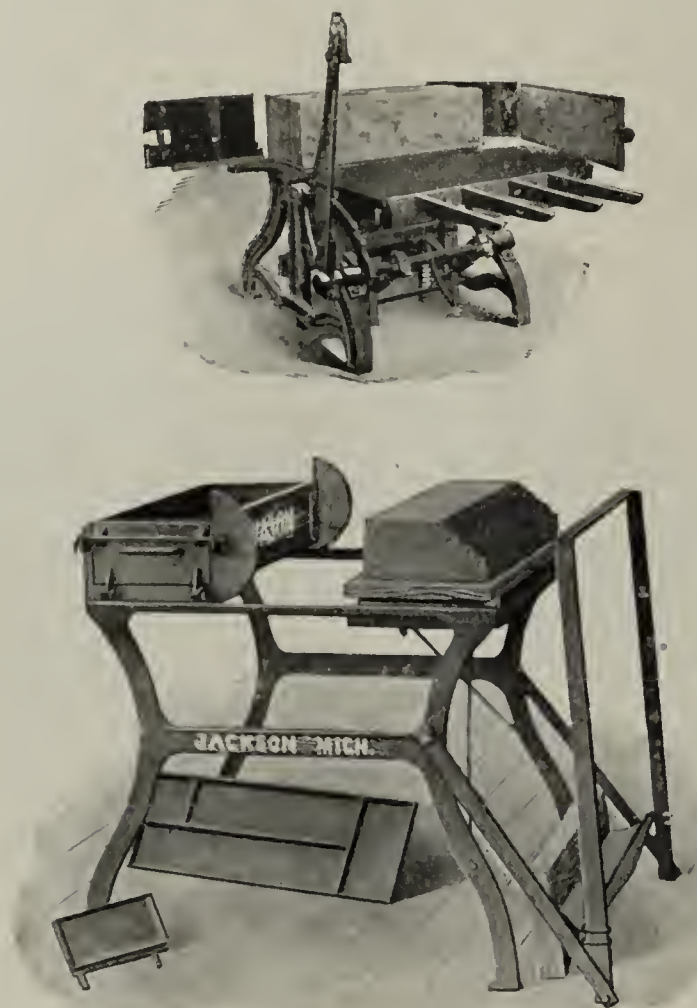
The "Normandin" machine has adjustable cores, adjustable sides, adjustable ends, adjustable inside rock angle attachments, adjust-

able face designs, adjustable facing block attachment, adjustable division plates for fractional blocks, adjustable inside octagonal attachment, and adjustable lifting carrier. Yet in spite of the remarkable adaptability indicated by such a wide range of adjustment, the machine is simple in construction and easily understood.

As types of other block machines we reproduce herewith several views of other makes by the same company. The "Peninsular" is a face-down machine, the core operating with a lever. When the end doors are locked the mold is intact and ready to be filled. It is adjustable to widths of 6, 8, 10 and 12 inches wide, 24 inches long and 9 inches high; it is also adjustable to quarter, half and three-quarter blocks. The complete machine weighs 1,000 pounds.

The "Champion" is claimed to be the only combined tamp and press machine on the market making a block, face down when tamped and face up when pressed. It is also capable of making

crete is thus moved bodily from side to side six times in each revolution. This means ninety times in each minute, for the claim is made that the cube revolves fifteen times per minute to get the best results. The cube form of mixing machine has been adhered to for many years by the Municipal Engineering and Contracting Company, of Chicago, Ill., which makes the claim that this form has too many advantages to permit any radical departure therefrom. In the literature issued by this company many arguments are put forth in favor of the cube mixer, and particularly eloquent, in this respect, is a report made by Clarence Coleman, M. Am. Soc. C. E., the assistant engineer in charge of the concrete superstructure of the Duluth Ship Canal, at Duluth, Minn. In his investigation he has taken up all the different mixers and compared their work, and puts the stamp of his approval on the cube mixer. The mixers of this company are adapted for all kinds of work. Because of their simplicity, the



CONCRETE BLOCK MACHINERY.

veneer blocks to build hollow, fire, frost and moisture proof walls.

The "Cemaco" concrete block machine is adjustable to 6, 8, 10 and 12 inches in width, 24 inches long and 8 inches high. The completed block allows for the one-quarter-inch mortar joint. The "Cemaco" is said to have speed combined with beauty of product.

There is reproduced in connection with this article a picture of the Schlegel residence, at Columbus, O., which was built of blocks made by the machinery of the Cement Machinery Company operated by the Columbus Cement Stone Company.

One of the very earliest forms of concrete mixers was the cubical, as this was regarded from the first as the best form to secure thorough assimilation of the components of the mass. This mixer consists of a box-like construction revolving on an axle, with means for filling and emptying. In a cube revolving on an axis through diagonal corners, the intermediate corners are alternately on either side of the center line. The mass of loose con-

crete is thus moved bodily from side to side six times in each revolution. This means ninety times in each minute, for the claim is made that the cube revolves fifteen times per minute to get the best results.

Among the cuts herewith reproduced is one of the Brady adjustable cement stone machine. This machine produces artificial concrete stone from sand, or sand and gravel, or sand and crushed stone, or entirely crushed stone, by crushing part of the stone as fine as sand. It produces stone from the above materials that requires a critical examination to determine the difference from the natural product, and at one-third the cost. Blocks are made in sizes from 1x2x6 to 8x18x66, in any design or shape. It is especially adapted for heavy construction; also makes sewers, conduits and culverts in sizes from 3 to 12 foot radius.

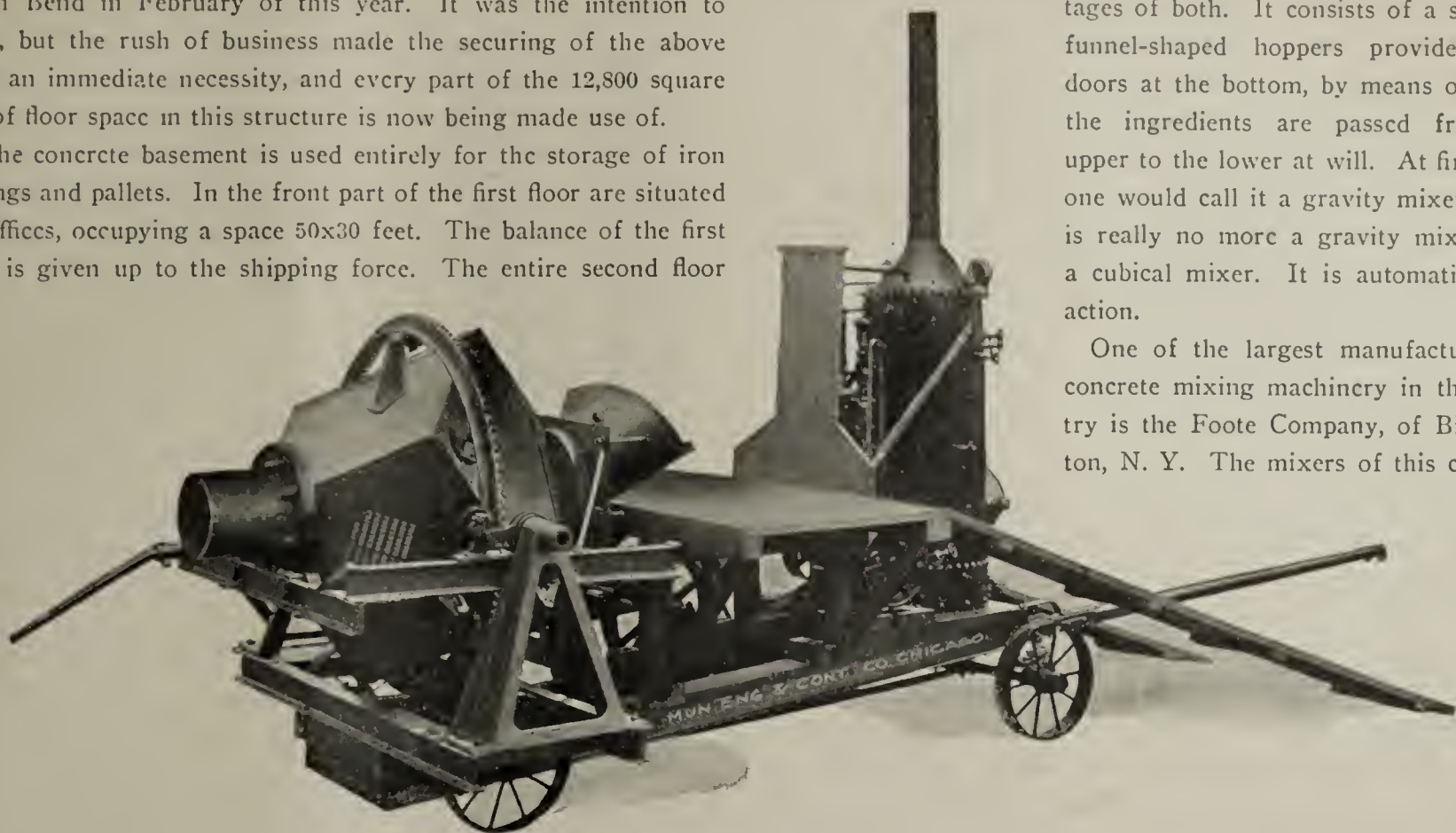
One of the leading block machinery companies of this country is the Ideal Concrete Machinery Company, of South Bend, Ind., engaged in the manufacture of the Ideal hollow concrete block

machine. The company were formerly located at Auburn, Ind., but on account of the rapid increase in the business was compelled to seek a larger city offering greater facilities, and removed to South Bend in February of this year. It was the intention to build, but the rush of business made the securing of the above plant an immediate necessity, and every part of the 12,800 square feet of floor space in this structure is now being made use of.

The concrete basement is used entirely for the storage of iron castings and pallets. In the front part of the first floor are situated the offices, occupying a space 50x30 feet. The balance of the first floor is given up to the shipping force. The entire second floor

not rapid in its action, and of the gravity types of mixers it is said by some, that they are not complete in their action. The Hains mixer was designed with a view to combining the advantages of both. It consists of a series of funnel-shaped hoppers provided with doors at the bottom, by means of which the ingredients are passed from the upper to the lower at will. At first sight one would call it a gravity mixer, but it is really no more a gravity mixer than a cubical mixer. It is automatic in its action.

One of the largest manufacturers of concrete mixing machinery in the country is the Foote Company, of Binghamton, N. Y. The mixers of this company



PORTABLE MIXER OF THE CUBICAL TYPE.

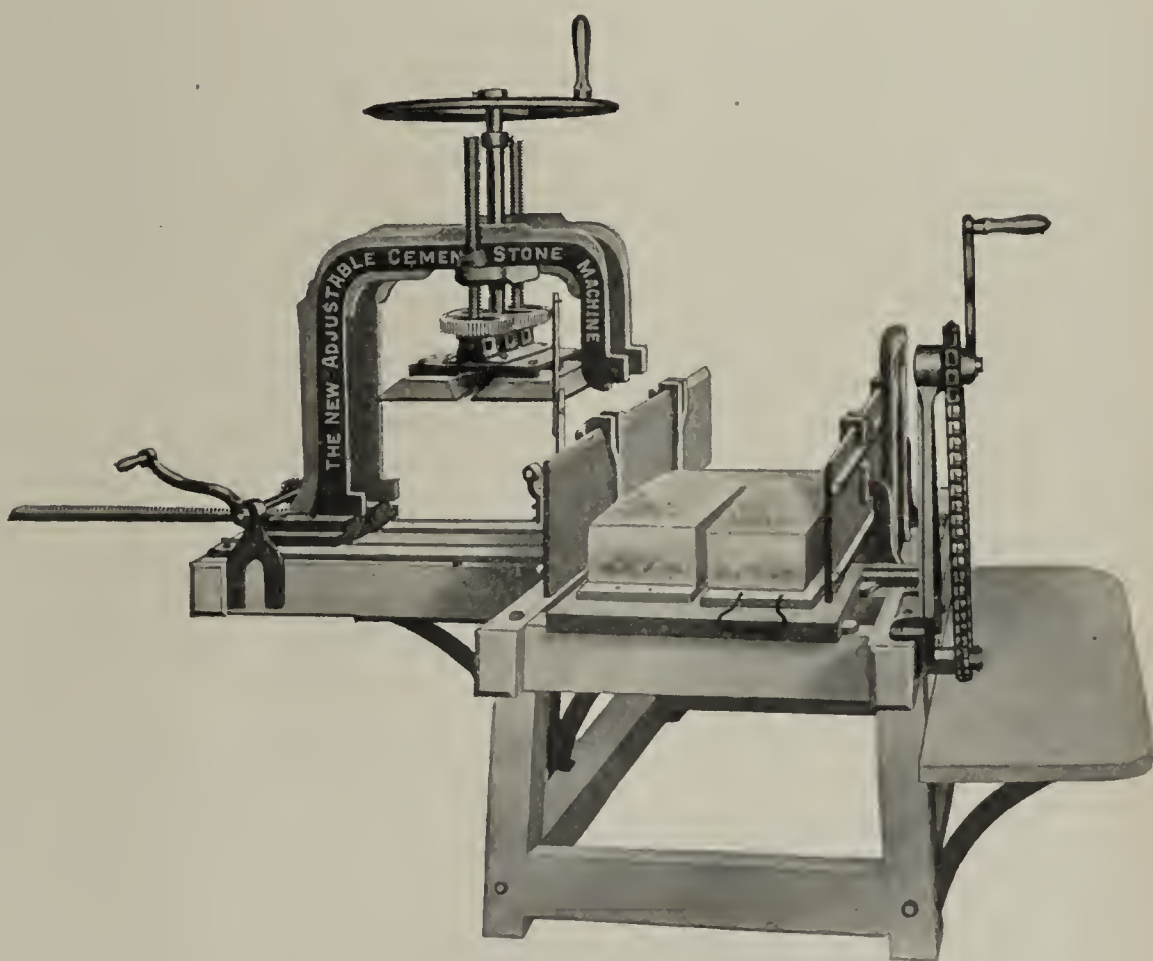
is used as the machine shop, and but few other block machine plants in this country are so well equipped with special and labor-saving machinery for the production of its block machines and parts. The third floor is given up entirely for finished stock, excepting a space occupied by the pattern-making department and equipped with modern pattern-making power machinery.

Some idea of the possibilities of the factory may be learned from the fact that its capacity is ten machines per day. The company, mindful of the future, has secured one of the finest factory sites in the city of South Bend, situated on West Washington and Circle avenues, and adjoining both the Lake Shore and Indiana, Illinois and Iowa Railroad tracks. The property has a frontage of 185 feet and a depth of 416 feet, and the erection of the new factory will be started in the spring of 1906.

This company has lately produced an adjustable octagon face-plate in rock and other designs, for use in the production of octagon blocks in any degree from 30 to 80. The new "Ideal Special" will, according to the claims of the officers of this company, revolutionize the making of large concrete stones. The machine can be used in any block yard independent of the kind of hollow block machines in use, and, being adjustable in its length, height and width, its capabilities may be judged from its extreme length, being 60 inches, width 18 inches, and height 9 inches. Its simplicity of operation and rapidity of production are notable features.

A criticism which the cubical mixer is open to is that it is

combine the batch and continuous mixing processes, either being used at will, and the change being effected with ease and speed. The process as followed in the design of these machines involves a stationary drum into which the materials are



CEMENT STONE MACHINE.

fed automatically in proper proportions, and a set of revolving wings set at proper angles to give the materials every turn necessary for perfect mixing and then discharge it automat-

ically. There are twenty-four of these wings and conveyors, each giving to the materials a turn equal to being turned once with a hoe or shovel. The arrangement for wetting the mixture, which is automatic (it being necessary only to attach a hose to the machine and regulate a stop-cock), is so adjusted that the materials are given a thorough dry mix first, being turned ten or twelve times before the water is let in, thus meeting the requirements of perfect mixing.

The mixing process in detail is as follows: The materials are shoveled or wheeled continuously into separate hoppers, from the bottom of which feed worms feed them automatically, in the exact proportions desired, into the mixing drum. There they are taken up by two sets of wings and conveyors. These are set at opposite angles. V-shaped wings carry the mixture up and then let it fall in turning it over, while conveyor-wings carry it along, each one of these giving it an additional turn. When the mixture reaches the center of the drum, having been thoroughly mixed in a dry condition, water is let in through spray-pipes, and the mixture receives an equal amount of turning while being wet. The water supply can be adjusted evenly, so that the mixture can be made as wet or as dry as desired. When mixing in batches any successive number of batches of exactly the same consistency can be made. At the end of the drum is an end gate which is raised and lowered in filling the wheelbarrows, and which also serves to hold the mixture in the drum when mixing in batches.

For all ordinary work the machine is run as a continuous mixer, combining the thoroughness and accuracy of a batch machine with the speed of a continuous mixer. In this case the mixture is dumped into wheelbarrows as fast as it is mixed without permitting any discharge onto the ground. When a wheelbarrow is filled, the end gate is lowered and the mixture held back in the drum until the next wheelbarrow is under it.

Where batch mixing is required, as in mixing the top coat for sidewalk work, etc., the gate at the end of the drum is kept closed. Then, when there is a sufficient amount of material in the drum, the feed worms are thrown out of gear, water is turned on and the mixing wings kept in motion until the batch is mixed to the required consistency.

Some improvements have been recently made in the mixing machinery made by the National Concrete Machinery Company, of Chicago, by doing away with the drum door and the mixing blades, thereby greatly simplifying the machines. The company is unable to furnish any details of this improvement, owing to the fact that such publication would imperil the foreign patents which are about to be issued.

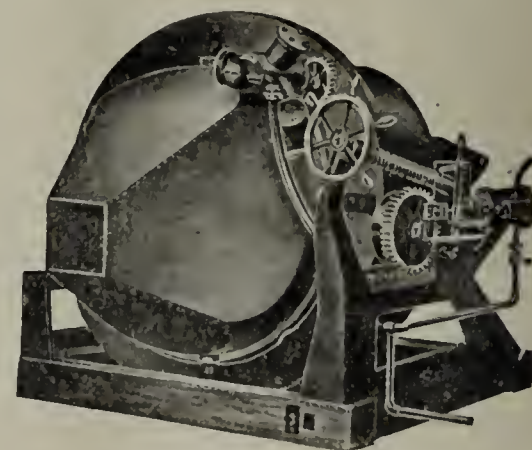
Another system of mixing known is the gravity process. The mixer in this case, as will be seen from the accompanying cut, representing the product of the United Concrete Machine Company, of New York City, consists of a steel trough or chute, which contains through its length the number of mixing members consisting of pins and plates. The aggregates being thrown into a hopper at the top, pass by their own weight through the mixer, and issue at the bottom in a thoroughly mixed mass. This process is simple and does away with elaborate mechanical installations which are liable to get out of order, thereby delaying the work. Mixers of this character are in use all over the world, particularly in North and South America, Great Britain, France, Sweden, Egypt, South Africa, Australia, New Zealand, and Japan. It is suitable for either large or small operations. In

small work the best way to operate is to measure the batch in layers of stone, sand, and cement respectively, which are fed to the mixer by men with shovels. In the larger work the mixer

is fed by an automatic measurer and feeder, by which the supply of the materials is regulated with great accuracy, so that the product of the mixer is always uniform in quality. The capacity of the feeder is governed by the speed with which the cement, sand and stone can be placed in their respective bins, and it is suitable for use in connection with gravity or batch mixing.

The gravity mixers of the United Concrete Machine Company are made in two kinds, sectional and non-sectional. Both styles are of metal, and the sectional is built in parts so that either four, six or eight foot troughs can be used. The length of the non-sectional mixer is not regulated in this way. The cubical mixer made by this company involves a number of new and novel features. Where it is not convenient to erect staging for dumping purposes, the drum can be tilted backward, thus enabling the machine to receive the aggregates at an extremely low point. This is an important factor in the economical handling of concrete.

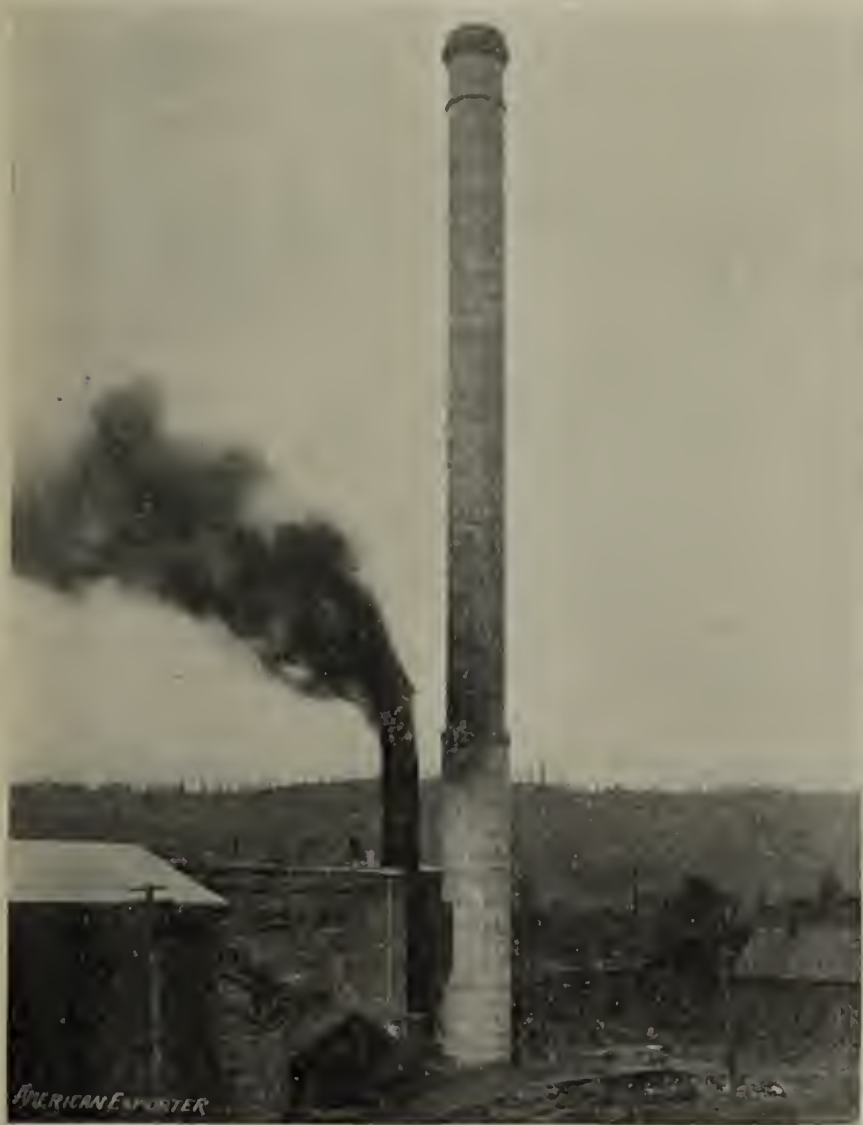
Another important feature is the steam tilting device. The simple movement of a small lever accomplishes this operation, whereas, in many types the combined efforts of several workmen are necessary to empty the drum. Lastly, the power is applied differently from every other type of concrete mixer, because the engine is supported by the tilting frame and tilts with the mixer, thereby abolishing a large amount of connecting gear. Moreover, the direct-connected engine eliminates all the liability to wear and breakage incurred by the use of the complicated connecting gear. The ground space occupied by this mixer is about two-thirds of that required by any other mixer of equal capacity.



Towers of Concrete.

Concrete has recently come into extensive use in chimney building, and in this capacity a great many advantages are claimed for it, when compared with brick or steel for this purpose. The concrete chimney is practically a monolith, and while time's action has always a serious effect on brick and terra-cotta, the concrete composition gains in strength and appearance. The modern chimney of concrete covers a smaller area than any of the other materials available for this use, a matter which is of the highest importance. It requires but half the room of the steel chimney, and one-third that of brick. It being lighter it does not require the elaborate foundation work of the others.

The accompanying illustration is made from a photograph of the chimney recently built for the Portland General Electric Company, at Portland, Ore., by the Weber Concrete Chimney Construction Company, of Chicago, Ill. Although larger chimneys have been raised, this is an exceedingly interesting specimen. The total height of the chimney is 238 feet, and it has an inside diameter of 12 feet. The chimney, as will be seen from the photograph, consists of two distinct parts. Up to where the offset is shown in the picture, it consists of a double shell, the outer one being eight inches thick, and the inner four inches, a four-inch air space intervening. Above the offset the chimney



CHIMNEY OF CONCRETE.

consists of a single six-inch shell ending in an ornamental head. The foundation for this chimney is only six feet below the surface, and consists of a concrete block measuring 24 feet square. In the construction of the chimney sand, steel and cement alone were used, the mixture of sand and cement being in the proportion of one to three. The steel reinforcement is sufficient to take up all the bending force caused by the wind pressure, and consists of vertical bars and horizontal rings. The rings are placed eighteen inches apart and take up the temperature stresses. All the steel is wholly embedded in the concrete, none of the metal being visible from either the inside or outside of the chimney. The structure is guaranteed to withstand a wind velocity of 110 miles an hour.

Among the advantages of concrete chimney construction, besides those noted above, is the fact that the work of rearing such a structure can be started with the least preparatory delay. In case of a rush order, it is possible to commence construction within forty-eight hours. Sand, cement and the iron rods necessary for such a contract can be secured anywhere, and there is

nothing to delay the work. Another point made, is that the chimneys are of increased capacity, the interior being perfectly airtight, and the surface smooth and regular from start to finish.

Concrete Piling.

A comparatively new field of usefulness for concrete is its substitution for piling. In fact it is said to be more than a substitute, for the reason that it is claimed to be superior to the wooden pile in a great many respects. In some cases those of concrete are cheaper than wood, although generally speaking the cement article represents a greater cost. This item is offset by the increased life and greater security of the new method.

Several different methods are resorted to in the utilization of the concrete pile. In some cases the pile is formed in molds and driven into place like the ordinary log, the only departure being the use of a "head" of some soft material on top of the pile to protect it from the blows of the falling weight. After the pile is in place this cap is removed. According to other systems the pile is formed in place, a hole having been made in the ground and the cement poured in after the proper reinforcement of metal has been placed therein.

The wooden pile has a number of disadvantages which are said to be entirely eliminated in the concrete construction. In the first place the big stick may be a perfect specimen as viewed in the ground, but may be transformed into a mass of splinters by careless or improper driving. A specimen of this trouble is shown in the accompanying cut, which shows a condition known as "overdriven." These sticks have been driven until the fibres of the wood are so broken up that the usefulness of the log has been utterly destroyed; another drawback connected with the use of the wooden pile is the fact that it commences to deteriorate from the moment it is driven in place unless it is kept constantly immersed with water and out of reach of boring animals, such as teredo and limnaria. Along the Pacific Coast these pests are particularly troublesome, and wooden piles must be constantly renewed.

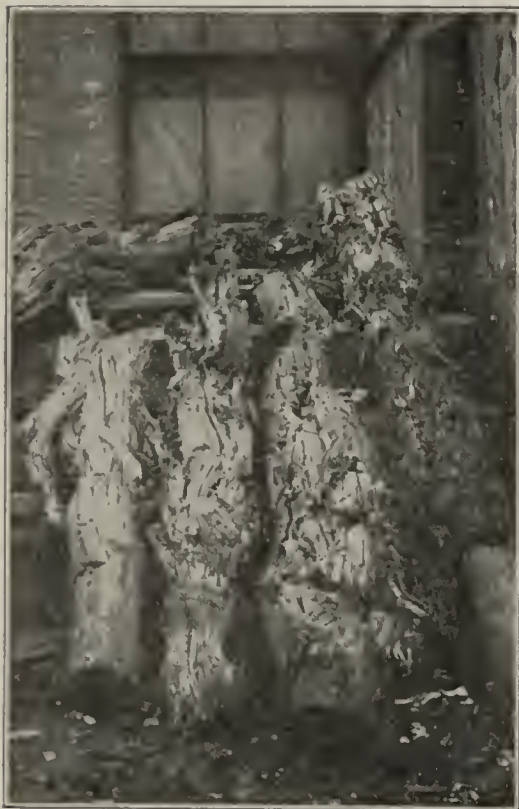
One of the most approved forms of concrete pile is what is known as the corrugated. The element of "skin friction" enters very largely into the work performed by the pile in place, and the greater the area of surface exposed to the soil, the greater weight it will support. For the purpose of increasing the amount of surface, the expedient has been resorted to, in the present case, of making two deep corrugations on each of the six sides of the pile, as will be seen in some of the accompanying illustrations. This pile is made above ground and every process may be under constant inspection. The reinforcement takes the form of a basket work of electrically welded rods, and the concrete is formed around this in a mold of proper shape. A hole is made through the length of the pile, and this is utilized in a very novel manner when it comes to putting it in its final resting place.

After proper seasoning the pile is handled in exactly the same manner as an ordinary wooden one. If there should be any imperfections in its construction, they would develop at this time so that there is reasonable assurance that the pile is entirely sound. It is picked up and dragged over ground to the pile-driver. While the latter is not used in the ordinary manner it is utilized for the purpose of giving the pile a few taps to set it in place. A light blow starts it, and after that the weight of the driver is allowed to rest on the top of the pile, while it is sunk to

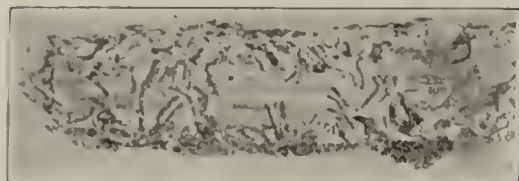
the desired point by the hydraulic method—a jet of water introduced through the hole in the center of the pile makes way for its reception. The operation is quickly and effectively performed in this manner, without the least damage to the pile. Where increased security is desired the jet is operated to the point of making a hole of some considerable proportions around the bottom of the pile and dry cement passed into it. Thus a ball of stone

driven into the ground by means of a piledriver in the usual manner. By a simple and ingenious device the core is collapsed, so that it may be withdrawn, leaving a clean hollow tube in the ground which has only to be filled with cement to complete the pile.

Concrete piles can be used in practically all places where wooden piles can be used, and in many places where the wooden pile would be quite impracticable. By their use, permanent instead



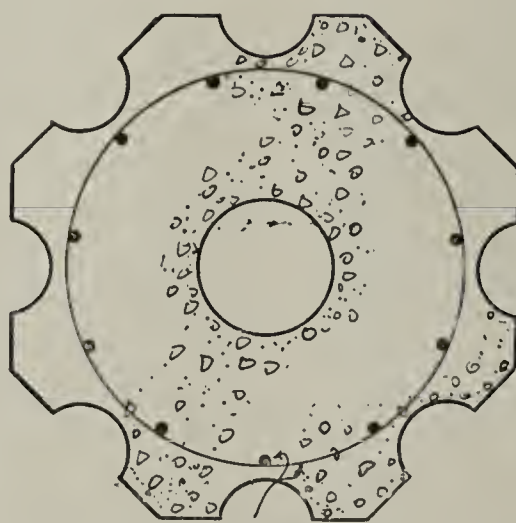
AN OVER-DRIVEN PILE.



PILE ATTACKED BY TEREDO.



BEING DRAGGED TO THE PILE DRIVER.



SECTION OF CORRUGATED PILE.



RIBS OF CORRUGATED PILE.



SPRAYING CORRUGATED PILES.



HOISTING PILE FOR DRIVING.



READY TO DRIVE.

is formed around the bottom and the hole through the length of the pile filled, making it one solid piece.

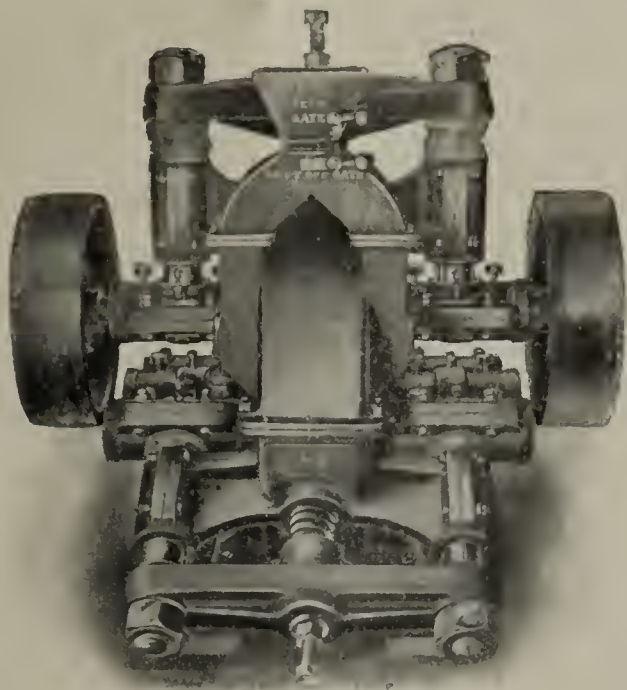
Another form of concrete pile construction is that of the Raymond Company, of Chicago, Ill., which is entirely different from the process mentioned elsewhere. The Raymond pile is formed in place. A steel core the size and shape of the desired pile is encased in a thin, closely-fitting shell. The core and shell are

of temporary structures may be obtained. They can be used in dry, filled ground as well as in wet soil, which may dry out, and cause wooden piles to decay. They are adapted to high ground and will prevent any settlement, the settlement all having been made by packing the soil while driving. All soft places, should there be any, will be found. These cannot be discovered in placing ordinary foundations. In view of these facts, concrete piles will

be found valuable in many places where wooden piles cannot be used.

Grinders and Crushers.

Somewhat heavy machinery is essential in the preparation of rock, clinker, limestone and other materials which enter into the composition of cement. The pulverizer shown herewith is the product of the Kent Mill Company, of New York, and it is said to have revolutionized the grinding of Portland cement. It has a large capacity, and is operated with a minimum of horse-power.

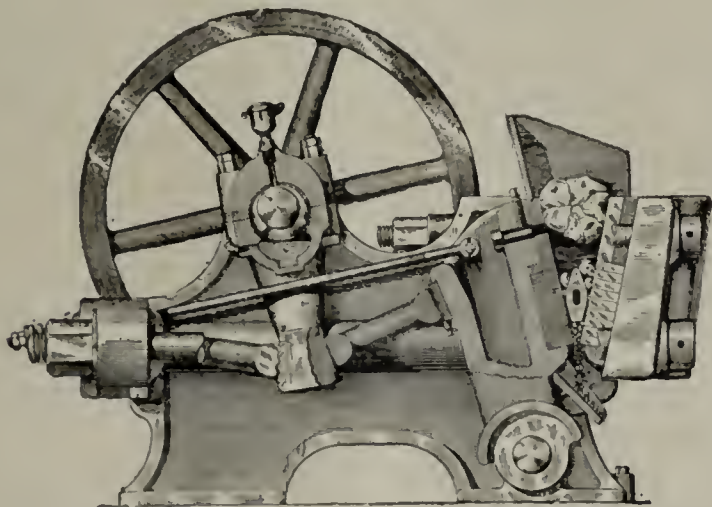


PULVERIZER FOR MAKING CEMENT.

One Kent mill pulverizer using not more than twenty-five horse-power, takes Portland cement clinker and grinds it to the required fineness at the rate of ten barrels per hour.

A number of these pulverizers have gone abroad. One has been recently shipped to J. W. Wilson, a large cement manufacturing concern at Auckland, New Zealand. Several have been recently sent to Japan for grinding phosphate rock, and since the first of the present year six of these machines have been shipped to different parts of Germany and Austria.

As is well-known, the larger pieces of rock and clinker must be run through a crusher to reduce it to a suitable size to pass



JAW CRUSHER FOR REDUCING LARGE LUMPS.

through the pulverizer, and such a machine is shown herewith, manufactured by the Krom Machine Company, which is affiliated with the Kent Company. Some crushers of this type were recently shipped to the Green Gold Silver Company, of Mexico.

STEAM HEATING TO IMPROVE SOCIAL CONDITIONS.

Mr. William K. Pierce, president of the firm of the Pierce, Butler & Pierce Manufacturing Company, recently returned from an extensive tour of the Orient, during which he made many interesting observations concerning the people, customs and business of the countries visited.

While traveling through Japan and China Mr. Pierce was particularly impressed with the great necessity for steam and hot water heating in the different hotels, public buildings and houses. He fully realized that these modern improvements must come eventually, and the disagreeable and dirty fireplaces now in the rooms of most Oriental hotels, will be eliminated. "The traveling public, which is increasing yearly," said Mr. Pierce, "certainly demands comfort and luxury, as



W. K. PIERCE.

well as the invigorating warmth of a properly, well-heated and ventilated room. The most modern of steam and hot water heating apparatus is manufactured in the United States, and I believe that eventually both Japan and China will import enormous quantities of our heating boilers and radiators for their large buildings and houses. I am satisfied that modern heating would eradicate a large amount of suffering and infuse a more healthful, invigorating and social atmosphere to the two countries."

Mr. Pierce states among other things that in Yokohama, Tokio and other prominent cities in Japan the Chinese perform a good many responsible duties which it might be supposed the Japs themselves would perform. Mr. Pierce was surprised to find that the cashiers, bookkeepers and accountants in the banks, hotels and leading business concerns in Yokohama, Tokio and other leading Japanese cities are Chinamen. Whether the Japs are afraid to trust their own countrymen did not appear, but the Chinese make first-class cashiers and accountants. They are quick and active and seldom make mistakes. They are found to be thoroughly trustworthy, and their Japanese employers have perfect confidence in them. The Chinamen are the perfection of politeness and affability, and are silent and quiet and attentive to business.

The Morse Chain Company, now located at Trumansburg, N. Y., has under construction at Ithaca, N. Y., a new plant with a capacity five times greater than the present establishment. The business was originally started for the manufacture of bicycle chains, but it developed into that of high-speed silent-running chains as well.

A GREAT ERA OF PROSPERITY.

There are many indications of an unusual era of prosperity in the United States. The business of a country is always more or less influenced by its crops, and the grain product of the United States has been unusually large, a fact hailed with delight in financial and railroad circles. It has been estimated that the corn crop will amount to 2,698,000,000 bushels, the greatest crop in the history of the country. The actual yield of corn last year was 2,467,000,000 bushels, and the previous high record was in 1902, when the crop amounted to 2,523,000,000. The crop in 1903 was smaller by about 200,000,000 bushels.

The yield of spring wheat was estimated at 285,000,000 bushels, showing only a small falling off from July's estimate, when the experts figured out 292,000,000 bushels. The actual yield last year was 219,000,000 bushels, the high record having been in 1898, when 292,000,000 bushels were harvested.

The estimate for winter wheat was 424,000,000 bushels, which is greater by 17,000,000 than the July estimate. The final crop in 1904 was 332,000,000 bushels. The total indicated crop of wheat this year will be 709,000,000 bushels, which is greater than that indicated in July, and compares with a final in 1904 of 664,000,000.

A recent feature of the iron market has been very heavy purchases of rails. During one week in the last month, the figures reached 200,000 tons, and this figure was topped during the succeeding week by orders for 250,000 tons.

Recent demands for steel rails have been very large, and in addition to this an order was given by the Pennsylvania Railroad for 16,000 steel cars. The immensity of this order can hardly be realized. These cars would make a train almost 150 miles long. They will carry at one time about 700,000 tons of freight, an amount so vast that it can hardly be conceived. On a single trip of 200 miles, at the lowest rate of compensation, this train would earn over \$350,000.

These things are mentioned to indicate the growing transportation interests of the country. The total of the new order will add only fractionally to the supply on hand, as the lines east of Pittsburg and Erie had 60,000 at the first of this year, some of which will soon go out of service. These cars earned over \$86,000,000 last year, which was less than for 1903, but this year the aggregate will be much the largest in the history of the company, owing to the revival of business. The average earnings per ton per mile were just about six-tenths of a cent. On this basis a team, wagon and driver on a good road could at the very outside earn not over 48 cents per day, and ordinarily not more than 30 cents. This shows what railway traffic has done for the country.

The announcement has been made by the Carnegie Steel Company that no more orders will be taken during the present year.

Not since 1892 have orders been so plentiful as now. In the last month there came a mass of orders to this concern which practically filled it up and made it necessary to shut down on all further business.

In connection with this news the prediction has been made that the iron and steel tonnage of the United States Steel Corporation this year will be much in excess of that of 1903, which was the banner year, and several million tons in excess of that of 1904.

Right in line with these statements is another of equal significance, that the shipyards along the Great Lakes are all so busy that it is impossible to place an order.

Another indication of the presence of a great American boom is shown by the amount of money spent for gems by the nation. The precious stones, including pearls, imported into the United States through the New York Custom House during the fiscal year reached a valuation of \$33,223,164, which is more than double that business of the preceding year.

The record since the beginning of the Treasury's new year, July 1st, shows that the figures of last year are in a fair way to be eclipsed by the time the entry books close next June. The August imports at New York, for example, amounted to \$2,275,873, or 12 per cent. more than in the corresponding month of 1904.

About 90 per cent. of this country's purchases of gems enter through New York.

GOOD AMERICAN BUSINESS.

The following interesting compilation of recent American business is from the *New York Sun*, of September 19th, under the heading "Good American Business."

"It is good American business when the exports of one month exceed those of the corresponding month of the preceding fiscal year by more than \$25,000,000, or \$1,000,000 for each working day. That was the case last month, the figures being \$117,453,000 and \$92,253,000, respectively. Exporting American products and manufactures at the rate of nearly \$4,700,000 each working day easily gives us first place among the exporting countries of the world. Still, compared with our resources and business activities generally, our exports should be much larger, and they will be when our manufacturers and exporters make up their minds to it and act accordingly. For the eight months ended August, the total of our exports was \$966,353,000, an increase of \$115,150,000.

"Under the same comparison the import figures for the two Augusts were \$95,826,000 and \$87,737,000, respectively, an increase of \$8,089,000. For the eight months they totaled \$770,345,000 and \$667,269,000, respectively, an increase of \$103,076,000. The net result of imports and exports for August was \$12,074,000 increase in our favorable balance of trade, which stands at \$196,000,000 for 1905 eight months, against \$184,000,000 for 1904 eight months, a gain of \$12,000,000. In other words, we were even with last year on the favorable balance on July 31st, and went ahead \$12,000,000 in August of this year.

"It is also good for American business that the Reading Railway Company, for itself and for the Jersey Central, is in the market for 6,000 freight cars, and that a contract is to be given out in Washington by the Southern Railway Company for 750 steel flat cars, 750 low side steel gondola cars and for 90 locomotives.

"It is also good for American business that the Pennsylvania coal and coke tonnage on lines east of Pittsburg and Erie for the year up to September 9th was 30,351,287 short tons, against 27,186,624 short tons for the same period of 1904, an increase of 3,164,663 short tons.

"It is good American business that on September 5th forty-six State banks in the Empire State, while showing an increase of \$3,591,000 in loans and discounts since June 7th, were also able to show \$2,706,000 increase in specie held, \$785,000 increase in 'cash items,' \$1,544,000 increase in cash reserve and \$109,000 increase in net profits.

"It is good American business that bank clearings in the

United States in the week ended September 9th were \$2,262,000,000, an increase over the same week of last year of \$546,607,000, or 31.8 per cent. The highest gain for any one city was 45 per cent. for New York.

"It is good American business that the tonnage of vessels clearing from Chicago in August was 1,289,253 aggregate, represented by 1,208 vessels, or forty-eight vessels for each working day. That result is a record breaker for Chicago.

"It is good American business that the completed returns of eighty-five railroads for July show a gain in gross of \$10,111,000 and in net \$3,000,000, or 9.18 per cent. What a fine showing may be expected when the railroads have moved this year's record-breaking crops of corn, wheat and other cereals.

"It is good American business (Bureau of Statistics' figures) that our exports to Cuba in 1905 fiscal year exceeded those of 1904 by \$11,000,000, to Austria-Hungary by \$3,400,000, to Denmark by \$826,000, to Italy by \$3,200,000, to the Netherlands by \$930,000, to Rumania (practically a new market for us) by \$668,000, to Spain by \$1,933,000, to Canada by \$9,507,000, to Guatemala by \$1,363,000, to Panama by \$3,764,000, to Salvador by \$382,000, to all Central America by \$5,659,000, to all West Indies (except Porto Rico) by \$11,013,000, to all North America by \$25,787,000, to Argentina by \$6,662,000, to Chile by \$775,000, to Ecuador by \$388,000, to all South America by \$6,347,000, to China by \$39,654,000, to Straits Settlements by \$856,000, to Japan by \$26,744,000, to Korea by \$636,000, to all Asia by \$67,486,000, to the Philippines by \$1,168,000, to French Africa by \$381,000, and to all the world after deducting shrinkages, by \$58,000,000."

RUSSIAN FAVORS FOR UNITED STATES.

The farewell visit of Mr. Witte, the Russian plenipotentiary in the Russo-Japanese negotiations, was made notable by the presentation of an important communication from the Czar to the President, relative to the remission of certain duties which have been levied by Russia, in the case of American products. This communication read as follows:

"Some years ago, in consequence of a misunderstanding in the interpretation of the most favored nation clause, there were established in Russia, on several articles of American production, custom duties on a higher scale than those levied on the same articles when imported from other countries.

"His majesty, the Emperor of Russia, has commanded me to inform the President of the United States that he has been pleased to order the discontinuance of the levying of such higher duties on American products in order that henceforth the American manufacturers should pay the same duties as importers from other countries."

On February 15, 1897, Mr. Witte, as Minister of Finance, increased by 30 per cent. the import duties on American steel and iron products, exclusive of agricultural implements, of which Russia stood in great need. According to our Treasury Department, only about \$3,000,000 of imports were affected by this, but manufacturers at that time were much alarmed. The action of Witte was a retaliatory measure. Our Secretary of the Treasury, in obedience to the provisions of the Dingley tariff law of 1897, had imposed countervailing duties on Russian sugar because of the bounties paid to exporters.

It is well understood here that Russia inflicted the maximum duties on certain American products while laboring under a

misapprehension concerning the action of this Government in imposing a countervailing duty on Russian sugar, in February, 1901, and on petroleum in March, 1901, because both these products were found to be bounty aided. Russia believed that this Government's action was prompted by a desire to make business hard for the Russian producer, whereas the Secretary of the Treasury was forced to act by the laws.

In the meantime it is possible that some action will be taken by this country looking to the revoking of the countervailing duties on petroleum and sugar.

It is not possible to arrive with any accuracy at the extent of the damage done to American commerce by this act of Russian discrimination. It must have been very considerable judging from the correspondence which the act brought forth from business people engaged in the Russian-American trade. The value of the American exports to Russia have increased, however, during the period of discrimination, but would have been much greater under ordinary circumstances. Our trade relations will be greatly increased under the new order of things. Apropos of this, Charles R. Flint, recently returned from a trip to Russia, and upon his arrival in New York had the following to say regarding the conditions in that country:

"I feel confident, now that peace is assured, that Russia is about to enter upon a period of great industrial activity, and I am satisfied that her policy is to encourage Americans to take part in the development of her enormous natural resources, comparable with those of the United States. Russia will undoubtedly reduce the duties on American products, which will probably be the first step in that direction.

"She recognizes that her industrial and agricultural conditions are practically the same as ours were twenty-five to fifty years ago, while differing from those of France, Germany, England and the other densely populated countries of Europe, that there are as good reasons to adopt American methods in industry and agriculture as there were for her to adopt our system of railway construction and equipment; that there is no way in which she can give such an impetus to industry in Russia as by interesting Americans to inaugurate there the methods which have developed under similar conditions the greatest prosperity ever known."

It was generally reported that Mr. Flint had received contracts to furnish Russia with warships, but on this matter he has refused to be interviewed.

Across the Desert by Automobile.—In his tour from the Atlantic to the Pacific, Percy F. Megargel, in the Reo mountaineer, has reached Laramie, Wyo. The start was made from New York, and the goal is the Lewis and Clark Exposition at Portland. At Omaha a complete camping outfit was added to the equipment of the car. Blankets, firearms and a cooking outfit, as well as a complete line of canned provisions, have been placed in the tonneau of the car. It is expected these will be found a necessity in crossing the desert tracts of western Nebraska, Wyoming and Idaho. An extra gasoline tank holding twenty gallons has been strapped on the side of the car.

Besides one or two punctures, no repairs have been necessary to the machine, which has encountered all kinds of roads since leaving New York City. The average day's work up to the time of the arrival at Laramie was 140 miles.

MANILA'S NEW ELECTRIC RAILWAY.

In law and diplomatic circles, the question frequently arises as to the precedence of the flag and the constitution in the expansion of a national influence abroad. Whether the flag follows or leads the law, may always be a matter for legal quibbling and contention, but, in the experience of this country, it has been demonstrated that the pick and shovel follow along so closely as to threaten the priority of the others. The experience of the American firm of J. G. White & Co., in the Philippines, is a remarkable demonstration of the truth of this proposition. The possibilities of a trolley line in Manila was early realized by a number of corporations and individuals, and the ground was looked over by several different interests with the object in view



FILIPINOS AT WORK.

of laying such a line, but with one exception they were all frightened off by the enormity of the difficulties which presented themselves at every hand. At first glance the utilization of the native labor seemed impossible, and the cost of transporting competent workmen to the scene of work was regarded as prohibitive. The

company named above decided that the field was such a promising one in so many respects that the effort should be made. The franchise being secured, an organization of competent men was effected to act as heads of departments and foremen, the intention being to give the native laborer a trial at the work.

It was evident from the very start that it would be necessary to teach these persons to a very considerable extent, but it was hardly foreseen that it would be necessary to commence at the kindergarten stage, but such was the case. Some of the men who were put to work had never seen a shovel, and had not the slightest idea of the use of a pick. Thus it was found necessary to give them a practical demonstration of the functions of these homely but invaluable adjuncts of industry, and a couple of hardy fellows from the United States were set to work showing their brown-skinned brethren how to load a wheelbarrow. The task having been accomplished, an effort was made to explain to the Filipinos that it was to be taken away, whereupon several of them seized hold of the barrow and endeavored to load it on

the back of another. They had to be instructed in the art of wheeling a barrow.

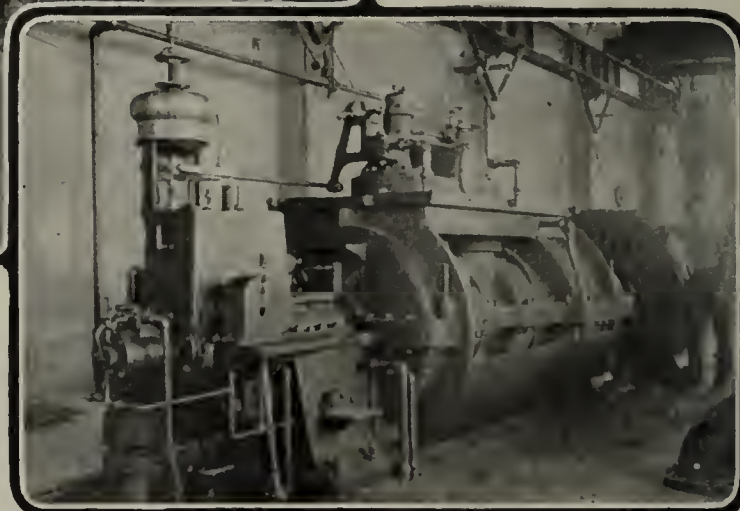
Many of these workmen were accomplished in the use of the machete to a remarkable degree. With this combined weapon and tool, wonders could be accomplished, but this was not at all suited for the purposes of railroad building, and the men had to be instructed in the use of the saw and other tools so familiar in most of the other countries of the world, but absolutely unknown to these dusky workers. When it came to the point of endeavoring to get them to recognize these implements by name, it was discovered by the men in charge of the work, that they had before them the task of making a language, for it was necessary not only to coin new words, but to create a vocabulary which would be acceptable to each of the many tongues to be found on these islands.

The task was a hard one, but the start having been made, the Filipinos quickly developed into very apt pupils, and soon became adept in the use of the American tools. It was but a short while before there was a very considerable number of skilled workmen among the dusky laborers. This is evidenced by the fact that the

motormen and conductors of the cars are, at present, all natives, as well as the attendants at the powerhouse. An experiment is being made in the direction of car-building, and native labor will be utilized exclusively in the car-building shops. The men are naturally carpenters, but under the tutelage of the American foremen



TROLLEY IN MANILA.



POWER EQUIPMENT.

they have developed into excellent metal-workers as well.

From fifteen hundred to two thousand natives have been engaged on this work for about two and a half years, and the results attained have been gratifying in every respect. Their wages ranged from 50 to 75 cents per day, which was regarded satisfactory from the standpoint of the employer and the employed. In fact, it suited the natives so well that it was responsible for one of the few troubles with which it was necessary to struggle after other obstacles had been overcome. This was the eagerness of the laborers to take a holiday upon the slightest occasion for the purpose of getting rid of the accumulations of coin. The matter was finally adjusted by making a systematic provision for

these holidays, as well as for all feast days, which are religiously observed by every one.

The present rolling stock of the line consists of ninety-five cars, each supplied with a Westinghouse double motor equipment. These are mostly of the open type, although the experiment is being tried with the convertible and semi-convertible types. Fifteen cars, which are both convertible and semi-convertible, were recently shipped to Manila from the works of the J. G. Brill Company, in Philadelphia, Pa., and the cars are interesting for many reasons. The most striking innovation, and a very novel arrangement, which is likely to become popular, is the use of what are called "filler seats." In the winter season, when the car is likely to be used regularly as a closed car, the seats will be reached, as usual, by means of a center aisle extending down the length of the vehicle, but in the summer time the car is an open one, in the fullest sense of the word, and at such times it is desirable to have the seats extend the whole width of the car. It is then that the "filler seats" come into use. They are secured to the ends of the permanent seats in such a manner that they fill the aisle, giving the full seating capacity of a standard open car. When the "filler seats" are not in use they are stored in the car barn.

The filler seat feature of these cars is shown in one of the accompanying illustrations. It also shows another peculiarity of these cars, and that is the screen to be seen toward one end of the car. This is rendered necessary by the social conditions of the country, which demand two compartments to a car. The partition consists of a wooden frame holding a fine brass screen. While serving all the purposes of a wooden structure, it permits the conductor to see every part of the interior of the car at all times.

The entire equipment of this line is said to be as thoroughly up to date as anything in the United States. The power-house is of cement and steel, constructed on lines familiar in this country, with a towering smokestack. It is equipped with four turbo-generators, with a total capacity of 5,000 horse-power, and all the other mechanical features which go to make up a first-class installation. The switchboard contains 44 panels, and is 105 feet in length. The main building of the power-station consists of an engine-room 47 by 170 feet, and a boiler-room 47 by 57 feet.

One notable instance where the procedure of this country has been departed from is in the adoption of the Canadian

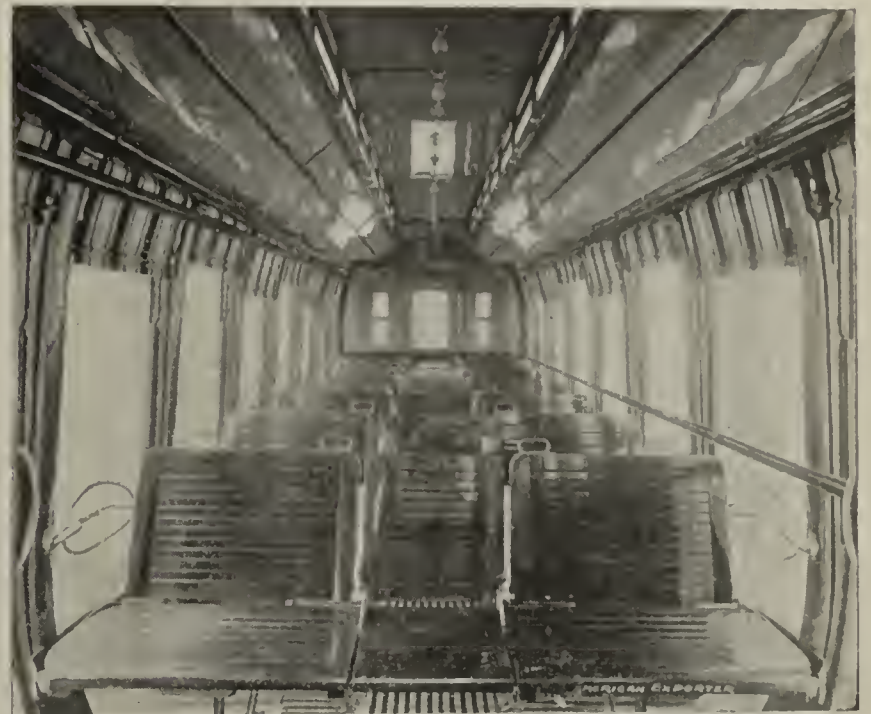


AMERICAN STREET CAR IN MANILA.

system of fare collection by means of fare-boxes. Twelve centavos, or 6 cents, is charged for a first-class ride anywhere within the city limits, an extra fare of 5 cents for every two miles being charged on the interurban sections of the line. The second-class fare is 10 centavos.

Three years ago the railway facilities of Manila were limited to thirteen miles of light track, upon which were operated half

a dozen diminutive horse cars, seating from eight to twelve persons each. That this system was inadequate, is shown by the fact that at that time nearly 10,000 private and public vehicles were licensed in the city. The rates charged for the carriages were very high, and even at that, there was a constant demand for them, so that it was difficult to secure vehicles except by engaging them in advance. The incapacity of the local transportation systems made it necessary for the government to maintain a large number of cabs for the use of



THE "FILLER" SEAT.

public officials during business hours. The present conditions make a strong contrast with those of the past. Now there are forty miles of roadway with power equipment as good as can be found anywhere in the world. The wisdom of this innovation has been demonstrated by the experience following the opening of the line. From the start it was a paying venture, a condition of affairs which is to be found in the history of very few really new roads. This road stands a monument to the energy and perseverance of a firm of Americans. The difficulties encountered at the commencement of operations, as already stated, were enormous, but every obstacle was overcome by attacking the problem in a bold and uncompromising manner.

SPANISH BUSINESS FOR AMERICA.

In a general report on the trade prospects in Spain, from the editor of the AMERICAN EXPORTER, Mr. Henry L. Geissel, attention is called to the promising field offered in Spain for American trade, if the American merchant will seek it properly.

Mr. Geissel says: "There is a market in Spain for American machinery of all kinds; general hardware; tools of every description; agricultural machinery and implements; railroad standard-gauge locomotives and cars; trucks and scrapers, wheelbarrows; electrical goods; notions, suspenders, novelties, hooks and eyes; drugs and chemicals; varnishes, paints and brushes; automobiles for passengers and freight; steam and gas and gasoline engines; American boots, shoes and polish; American furniture for household and office; American pitch pine and hardwood lumber; musical instruments, toys; confectionery, etc., etc., and the American manufacturer can get it by going after it in the right way. The AMERICAN EXPORTER (Spanish edition) is well known here, being received by practically all the importers and others liable to be interested in American goods that I have called on."

ITS PRODUCTS DOT THE GLOBE.

One of the officials of the Morgan Engineering Company, of Alliance, O., recently undertook to make a canvass of the cranes built by that company which are now in successful operation, and it was found that the total footed up to over 2,200, a remarkable record for one concern. This is not astonishing, however, when one contemplates the magnitude of the establishment. This information was so gratifying to the members of the firm, that



ELECTRIC CRANE.

it was compiled in the shape of a brochure, which is now being circulated among the trade. Besides the construction of cranes, this company manufactures a variety of heavy machinery, such as steam-hammers, punches and shears, hydraulic machinery, presses, riveters, gun-carriages and charging machinery, both of the floor and overhead type.

Ordinarily it is a difficult matter to attract popular attention to articles of this character, but the Morgan Company did this very successfully at the recent exposition at St. Louis, Mo., where



CUTS A 2¼-INCH PLATE.

one of its overhead traveling cranes was installed in Machinery Hall. Such a piece of machinery in operation is an inspiring sight, but unfortunately a crane installed for this purpose has completed its work before the advent of the crowd of sightseers,

and for that reason it reposed in idleness during the term of the Exposition's existence. But this was arranged differently by the Morgan people, for after the crane had finished the work of carrying and placing the exhibits in the building, it was used in the transportation of visitors from one end of the hall to the other. Thousands of delighted passengers were carried, and in this manner an exhibit of marvelous interest was made to attract universal attention, whereas under ordinary circumstances it would have been seen only by a few persons directly interested in such matters, and who would have hunted the crane out for inspection.

This installation was a 25-ton, 7-motor, double-trolley, overhead-traveling crane with a span of 77 feet and a lift of 24 feet.

The machine traveled 1,400 feet, the length of the building, at the rate of 500 feet per minute. The accompanying cut shows an overhead crane of smaller capacity than the one referred to.

Another interesting piece of heavy machinery made by this firm is the electrically driven plate-shear, shown herewith. This picture is a reproduction of one of the largest ever built in this country. The machine referred to will cut cold steel plates 2¼ inches thick and 144 inches wide.

In all open-hearth plants the charging machine is a necessity in order that the cost of charging a furnace may be reduced to a



BENDS BATTLESHIP KEELS.

minimum. The Morgan Company enjoys a very favorable reputation for the design and construction of machines for this purpose. One of the latest designs of the floor type is shown in the accompanying cut, which is preferred in many cases for the reason that it allows the overhead crane to travel freely over the machine. The company also makes an overhead type which has the advantage of leaving the floor absolutely free, and does not make it necessary to construct a floor capable of supporting such a heavy piece of machinery.

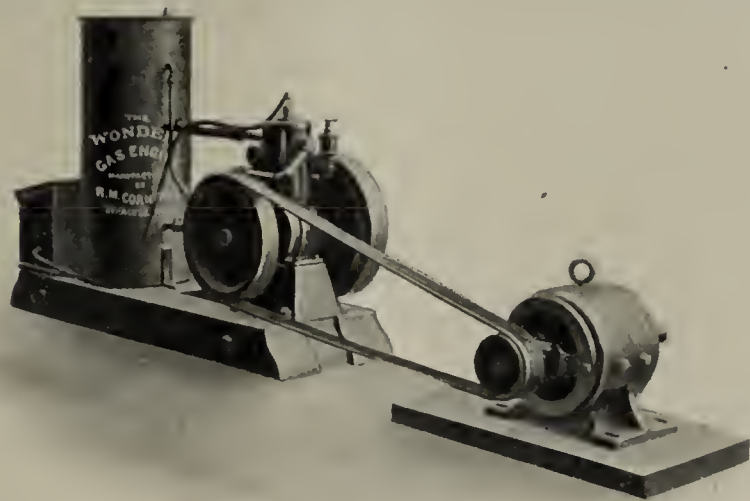
Several interesting pieces of machinery have been constructed by the Morgan Company for the United States Government. Notable among these is the hydraulic steel plate bending press, shown herewith. This has been used with great success.

Among the work in hand at this plant at the present time is an order for twenty-five large gun-carriages for the United States Government, just being completed. There has just been shipped to Japan a large plate-mill, bolt and nut plant complete, with buildings and all the necessary machinery, and also a large rod-mill plant. At the present time there are no less than twenty-two Morgan cranes installed in different parts of Japan.

The works of the Morgan Company, at Alliance, O., cover fifty acres of ground and employ 1,000 workmen. The business was established in 1868 by Thomas Morgan.

SMALL ELECTRIC LIGHTING UNITS.

The construction and operation of small electrical generating plants have become so simplified in the last few years that they are now made for practical use in lighting houses with a capacity as low as 15 lamps. It will be seen that such a plant will answer a great many purposes, and make a very welcome addition to isolated farmhouses, and similar establishments which may be out of reach of gas or electricity. The firm of R. M. Cornwell Company, of Syracuse, N. Y., have been leaders in this line. Being jobbers and manufacturers of electrical supplies, they realized early the demand for such an outfit, and commenced experiments with a view of arriving at a design which would be simple, compact and easy to operate, and at the same time capable of being sold at a low price. They manufacture these small outfits in several sizes, one with an engine of $1\frac{1}{2}$ horse-power, capable of supplying current for 15 lights. With a 3-horse-power engine, 30 lights of 16 candle-power can be supplied. Of course, by making use of a lamp of a lower candle-power more lights are available. The outfit is shipped, as shown in the accompanying cut, connected with gas and water tanks, and also all electrical connections made, so that the machine is ready to operate as soon as the tanks have been filled with gasoline and water. Where it is desired, these outfits are supplied with everything necessary for a complete instalment, including volt meter, ampere meter, wire, lamps, cord, receptacles and rosettes. Such an outfit is very desirable for an up-to-date farmhouse, cottage, shop, or, in fact, any place where an efficient and uniform light is desired.



SMALL LIGHTING OUTFIT.

It is said to be possible, in connection with one of these outfits, to light a building at a rate cheaper than can be done by a lighting company.

These goods have been regarded with great favor by foreign buyers, and the company referred to have worked up quite a considerable foreign trade. A few days ago a complete outfit was shipped to Lima, Peru, and it consisted of one $\frac{1}{2}$ -horse-power engine with 12 lighting generators. An order was received about the same time from a party for 12 alternating-

current generators. The generator has a rated outfit of 12 watts, but will easily furnish three times that amount. Another interesting order recently received was from China for a complete electrical instalment, with an auxiliary accumulator of 75 amperes.

The cost of this outfit is very low, and the expense of operating is also inconsiderable. It is said that the "Wonder" engine of $1\frac{1}{2}$ horse-power capacity, will operate at a cost of about one cent per horse-power per hour, contemplating the cost of gasoline at the rate prevailing in the United States. On this basis the 3-horse-power engine can be operated at full capacity for ten hours at a cost of 30 cents.

In addition to the engines, dynamos and electric-lighting outfits, the Cornwell Company makes an engine for launches, which has all the merits of simplicity and efficiency contained in the other productions of the company. All of these goods are in favor for export trade, because of their compactness, which is a great consideration in making foreign shipments.

PROPOSED FLOATING EXPOSITION.

The proposed Floating Exposition, being arranged under the auspices of the Export Shipping Company, of New York, is meeting with considerable encouragement, and bids fair to be successfully carried through. A meeting was held in New York on September 14th, for the purpose of organizing an Advisory Committee, consisting of representatives of Boards of Trade, Chambers of Commerce and manufacturing organizations, which was accomplished.



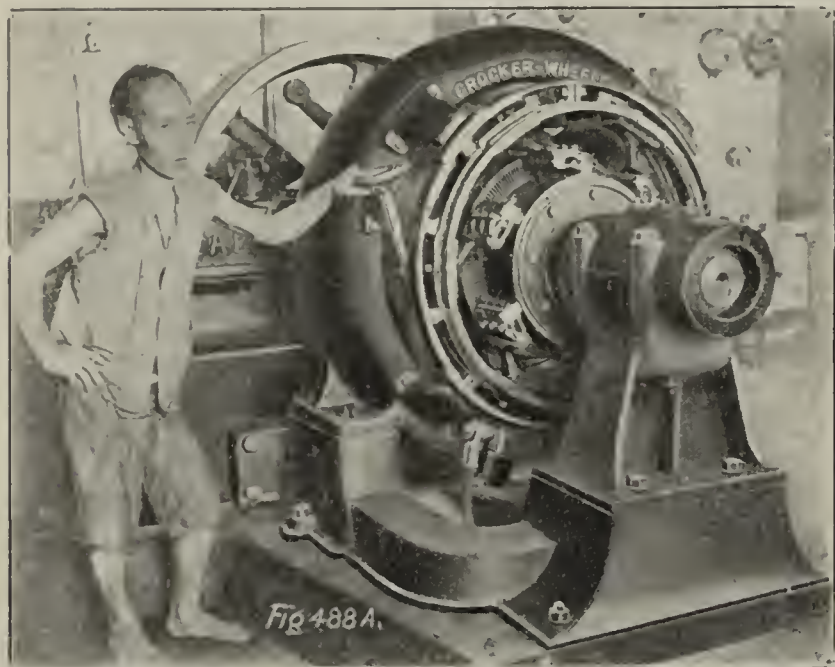
A resolution was passed that a report should be made to the Chambers of Commerce of Chicago, Cleveland, Cincinnati, Buffalo, St. Louis, Detroit, Indianapolis, Kansas City, Pittsburgh, Baltimore, and other leading cities, and that they be requested to call a meeting of their members as early as circumstances would permit to receive a representative of the Exposition, with the purpose of deciding upon some method of concentrating the exhibits to be made by local manufacturers and so avoid duplication. These invitations have met with hearty response. The project has been endorsed by the officials of the New York Produce Exchange and the Maritime Association.

Upon invitation of the New England Cotton Manufacturers' Association, Mr. F. G. Bailey addressed their convention in session at Atlantic City, September 22d, and a resolution was passed instructing "the president to name a committee of five, which shall investigate the proposals of the American Floating Exposition and report a plan whereby a collective exhibit, representative of the products of the New England Cotton Manufacturers' Association, shall be made."

The decision of the managers to avoid duplication of exhibits, wherever possible, consistent with the national character of the exhibition, is warmly endorsed, not only by the meeting of September 14th, but by individual manufacturers all over the United States, who had experience in the confusion caused by too many exhibits of one type of product.

FILIPINO RUNS THE GENERATOR.

The AMERICAN EXPORTER is always pleased to make note of the successful utilization of American machinery abroad, particularly under the unfavorable conditions that are sometimes encountered in introducing modern machinery into countries where it is necessary to make use of native labor as overseers. The accompanying illustration shows a Crocker-Wheeler generator installed in the United States printing plant at Manila. The first of these



was put in place about four years ago as an experiment, which proved to be such a happy one, that recently a second 50-kilowatt machine was set up in the same plant.

The native in the picture, who is very enthusiastic about his charge, is quoted as saying, "Me saber Crockern-Whelem electricidad maquina," which, roughly translated, means "There's nothing I don't know about Crocker-Wheeler machines."

The Bureau of Public Printing, at Manila, is in charge of Mr. Earl L. Tatum, electrical engineer, who says that he has encountered very little difficulty with the installation.

CABLE COMMUNICATION WITH JAPAN.

An agreement was made and signed on September 14th between Mr. Takahira, the Japanese Minister, and the Commercial Pacific Cable Company, by which cable communication between the United States and Japan at an early date is assured. "This project has been agitated for a great many years, but there was always some obstacle in the way until the present time," said Mr. Clarence H. Mackay, the president of the Commercial Pacific Cable Company. "President Roosevelt has given us hearty support in order that American commerce might have a quick service to Japan and China by an American cable. We have also received efficient aid from former Attorney-General Knox and Attorney-General Moody. We shall proceed at once with the manufacture and laying of these two cables, which will take several months. The Commercial Pacific Cable Company will then pierce the Far East at three points—the Philippines, China and Japan. With the cable that has just been completed to Newfoundland, a fifth cable to Europe, which will be laid within a month; a cable from Guam to Japan, and one from Manila to Shanghai, we will have a system extending more than two-thirds of the way around the globe."

WATCHES BY THE MILLION.

When one contemplates that the jeweler in the United States makes an invariable charge of one dollar for replacing a broken mainspring in a watch, it seems marvellous how a complete timepiece, mainspring and all, can be made and sold for that amount. It remained for American ingenuity to accomplish this feat, in spite of the fact that certain countries of Europe have been regarded as the watchmakers for the world. Despite their patient laborers toiling day after day for a mere existence, and with the skill of generations to back them, the genius of America outstripped them, and to-day American watches and clocks are being shipped all over the world.

The dollar watch has become almost a by-word. It ticks for the Esquimo in his ice hut and the African in his leafy bower. The Australian miner and the European laborer depend on it, and likewise it has been the joy of the small boy all over the world. One of the earliest ambitions of the small boy is to own a watch like his father's. Unless the aforesaid papa was endowed with a large share of this world's goods, the lad's ambition languished until such time as he was old enough to properly care for a timepiece, unless there happened to be some discarded watch around the house, and this could be relied upon for nothing but the tick. The dollar watch can be placed in the pocket of the small boy as soon as he is old enough to find the pocket.

A visit to the birthplace of the dollar watch reveals the fact that the timepiece is constructed with as much care as its more expensive counterpart. The more delicate parts are all tested individually before being mounted, and after having been assembled to form a complete timepiece, the watch hangs for a period on a timing rack, and, having demonstrated its ability to keep time accurately in this position, it is laid on its back for a similar period, and must make an equally clean record.

The dollar watch originated ten years ago in the brain of Robert H. Ingersoll who, at that time, was associated with his brother in the manufacture and sale of rubber stamps and novelties in New York City. The boys had drifted from a Michigan farm into the great metropolis, and, with a capital of \$175, had built up a business of \$5,000. This alone might be regarded as an enviable performance, but the subsequent achievements of the two Michigan farmer boys makes this matter sink into the pale of insignificance.

The factory of the makers of the dollar watch, in its appearance, is like that of any high-grade timepiece, and the visitor strolling through the establishment would not for one moment realize that the watches taking form before him were to be sent all over the world and sold at one dollar each. The workmen appear and are, as a matter of fact, the same high-grade artisans as will be found in many of the more pretentious establishments of this country, and the various operations which are being conducted by these men and women are carried out with the same precision to be found in the factories where the heavily bejeweled chronometer movements are being put together. In many respects the machinery used in the different plants are the same, but the Ingersoll watch has been simplified to such a degree that its assembling is effected with much more rapidity. Hence the low cost.

As one starts on a tour of the Ingersoll plant, and beholds a great pile of brass sheets 25/100 of an inch in thickness, and

cut into various lengths, it is hard to imagine that these could be turned into watches. But such is the case. These strips of metal are fed into stamping machines and issue therefrom in the shape of wheels, pinions and parts of cases. These machines are geared up to their greatest speed, and are, in addition to this, made to stamp two pieces at one blow.

All of the parts of the interior mechanism are made in this manner, and they are assembled in groups by the workmen, each one contributing his own special part, so that before it has been completed, the timepiece has gone through hundreds of hands. The case is made in the same manner, being thrown out of the stamping press in three parts, the band, bezel and back. It has been estimated that the actual time spent on a case is about 3 minutes, but, in the course of its completion, it has passed through a great many hands, so that it has really been longer than that period in its perfection. The hands are punched out of thin steel sheets with great rapidity, the metal being fed automatically into the press. There are one hundred and fifty of these automatic machines pounding away constantly, and delivering a stream of watch parts of one kind or another.

Having disposed of the case and hands we now take up the main wheel of the timepiece. This little wheel has a barrel rim



AN AMERICAN WATCH FACTORY.

in which is placed the mainspring of the watch. These are produced with lightning rapidity, the rim soldered on and passed along to have a minute outside spring attached.

Cases, or other parts which are to be polished, are given the desired luster by undergoing an experience in a revolving barrel which is filled with sawdust or leather scraps.

The manufacture of the mainsprings is a delicate operation as well as a very interesting one. Long strips of the spring metal are rolled from coils and passed through gas pipes reposing in a bed of fire. The spring thus becomes heated to the proper temperature, and is then plunged into a tank of cooled oil. Then again it is treated to a baptism of hot lead. This is the tempering process. The next thing is to give the spring a smooth surface, which is accomplished by a passage through a battery of emery wheels which act on the sides and edges of the metal and impart a mirror-like surface to it.

Each of these pieces is tested after having been cut up into suitable lengths, by placing it in a balance. If the tempering process has been thorough and complete, it will be indicated by the weight of the metal. Minor shortcomings in the spring may be corrected, but if the weight shows any great variation, the

defective part is thrown out entirely, and some examination of the tempering process made to ascertain the reason.

The hairspring is the same to the watch as the governor is to the engine. This tiny thread of steel performs the function of regulating the movement of the timepiece. They are coiled in sets of eight and turned out of the machine to be separated by deft-fingered girls. Each one of these tiny coils is subjected to a severe test, for upon it depends the success of the timepiece. No matter what care had been bestowed upon the other parts of the watch, if the hairspring was out of tune the entire mechanism would be likewise. One of the hairsprings, which has been tested for accuracy, is used as a model in testing others. With this perfect one as a guide, each new one is adjusted to beat in perfect unison with it for thirty beats. This gives the operator the opportunity of noting the slightest irregularity, which she quickly corrects. If it proves to be too slow the trouble is remedied by shortening the spring.

One of the means by which the cost of the dollar watch is brought down to a minimum, is by the elimination of the jewels which are to be found in a high-grade watch, but in order to make the watch reliable as a timepiece, it is necessary to make these bearings with exceeding care. The shaft on which the hairspring is mounted, for instance, is a very delicate piece of mechanism, the ends of which must be sharp enough to "bite" the finger nail before they are approved for use.

In the assembly-room there are hundreds of employees, each one engaged in some special operation, to complete the timepiece. As stated before, the essential parts of the watch are assembled separately and tested before being placed into the case, and each employee has his own part to play in the completion of the watch. They go from hand to hand until they finally reach the timing rack, where several days are devoted to their final examination before they are placed in the hands of dealers.

A guarantee for one year goes with each of these watches, and it is only reasonable that a certain proportion of the product should be returned to the makers. But it speaks volumes for the excellence of the watch, that the portion of the factory devoted to repairs is the smallest department of the establishment.

It is a rather remarkable fact that as the size of this factory has increased, that of the watch has decreased. Ten years ago the watch turned out here was but a trifle smaller than some of the clocks of that time. In fact it resembled a clock to such a degree that it was regarded as a serious objection. However, 10,000 of them were sold that year, largely by the use of judicious advertising. By various improvements, the thickness of the case was materially cut down from time to time, until at present the watch has every appearance of the typical high-grade timepiece. The evolution of the watch makes an interesting story, and is mutely told by the samples of each year's product as they hang side by side in the company's office.

From the humble beginning in 1892 grew the enormous plant of 1905, which employs 1,500 persons, with an output of 150,000,000 watches last year, and indications of reaching the 200,000,000 mark during the present year. One of the means by which this enormous business has been attained has been by the use of wise advertising methods. With its first achievements in the horological world, the firm commenced spending money for advertising and has never departed from this course. Last year the amount of \$100,000 was invested in this manner.

NEW HOME FOR LOZIER COMPANY.

While the Lozier Company was engaged exclusively in the manufacture of boats, it was obviously desirable that the company's offices and salesrooms should be located near the water front, and for many years the firm has done business in the Washington building, at 1 Broadway. Such a location, however, was entirely unsuited for the purposes of this concern when it entered into the business of building automobiles, and accordingly it was necessary to secure a new home.

A new four-story-and-basement building is now being erected at the northwest corner of 55th street and Broadway. The accompanying illustration shows that there will be ample room



for the display of motor-cars and motor-boats on the first and second floors, and offices and warerooms on the third and fourth. The basement will be equipped for repair-work, with accommodation for storing a limited number of cars.

The building is being specially constructed, and while it will not be the largest salesroom in New York, will undoubtedly be one of the handsomest and best-equipped. The structure is of glazed brick, with trimmings in a harmonious tone of buff. Except for the motor car entrance on 55th street, the entire frontage of 26 feet on Broadway and 76 feet on 55th street, will be of plate-glass, the main salesroom on the first floor presenting a continuous plate-glass front which must prove to be a most attractive feature. The building will lend itself admirably to an effective display of illuminated signs, and every advantage will be taken of this.

Specific plans, of course, have not been made for the display of

the different types of automobiles, motor-boats and marine motors which the Lozier Company makes, but when these are formulated it will be found that the motor car will be effectively shown up, and in addition to this, several types of marine motors will be shown in actual operation.

THE MOTOR CAR ON RURAL MAIL ROUTES.

Less than five years ago the automobile was regarded as the millionaires' toy because it was altogether out of reach of the man of average income, both as regards the purchase price and the subsequent cost of maintenance.

But the automobile industry has not remained at a standstill any more than has Uncle Sam's mail service, and during the interval cars have been designed and introduced that sell at prices within ordinary reach, that cost but a few dollars per month to maintain, and so extremely simple in construction, that any man of ordinary intelligence can quickly learn to operate them himself and make what few repairs may become necessary.

A great factor in bringing about this change was the little Orient Buckboard, as regards the motor's substitution for the horse in industrial work, not only because of its low price, but because its lightness, simplicity and durability made it serviceable for the use of telephone and telegraph linemen, employees of electrical stations, newspaper and light merchandise deliveries. Its introduction into the service of the rural carriers is the most recent advance made in this direction.

Being light in weight, but very powerful, it runs over the sand and thick mud instead of through it, as do the heavier cars, and conducts itself very satisfactorily on rough roads or in hilly country.

From a superficial survey of the buckboard one might be led to the conclusion that the driving parts are too exposed. As a matter of fact all the vital parts are fully protected, and what is visible to the eye consists of protecting covers and casings. For instance, the engine appears to be exposed. Instead the working parts are enclosed in an air-tight dust-proof case, and only the flanges of the cylinder are exposed for air-cooling purposes. The same protection applies to the gears, the connections and the batteries and the electrical appliances. The buckboards are especially suited for the rural delivery service as they are air-cooled, which prevents possible delays in winter by the freezing of the water generally used in maintaining the machinery at a proper temperature.



SOME INTERESTING EXPOSITIONS.

The opening of the Simplon tunnel will be signalized by a great world exposition, to be held at Milan, the greatest industrial city of Italy. The boring of the tunnel from Iselle in Piedmont to Briga, in the Swiss Canton of Vaillse, has been completed, and the tunnel will, it is expected, be ready for service during the present year. The event will be recognized by the inauguration of the "Work Festival" next spring at Milan. The programme of this exposition has been issued, and can be secured by those interested from the Italian Chamber of Commerce in New York or Piazza Paolo Ferri 4, in Milan. According to this, there will be sections as follows:

International Section of Land Transports, Aeronautic and Metrology, comprising all that refers to the ordinary roads, carting, cycling, automobilism, railroads, electrical land transports, aeronautic, post, telegraphy, telephony, metrology and the Simplon Tunnel.

Providential Section, with two divisions—one national for all that regards mutual help and insurance, for cooperation, savings banks, popular credits, the institution of defense and of work patronage. The other is international for the prevention of accidents and relief of workmen, institutes and legislation for insuring against loss of work; the providential assistance and the patronage for helping workmen employed in the transport line.

International Gallery of Work for Industrial Art, which will include a demonstration of new mechanical processes which may be of general interest. Other sections are devoted to History of Transportation; Pisciculture and allied industries; Agriculture, and Public Hygiene.

Among the chief attractions of the exhibition will be a section of the tunnel, which will demonstrate to visitors the different phases of the work of cutting through the Simplon with drills, and showing all the movements of the auxiliary machinery in action.

The Belgian Government, on the occasion of the seventy-fifth anniversary of independence, gave its official sanction and active support to the convocation of an International Congress, which took place on September 25th, to discuss a number of interesting and important topics relating to the best means to be adopted to further the commercial intercourse between the various peoples of the world. The Congress was held at Mons, and the committee which was charged with its organization included a number of the most prominent officials and business men of Belgium, especially nominated for this purpose by the King himself. The programme of the questions discussed before this Congress was an extended one, bearing, among other matters, upon the question of international statistics, economic and customs policy, the expansion of civilization in the new countries and the means and agents to be adopted to further this work of expansion. In regard to international statistics, some of the topics discussed dealt with the improvement of the sources by which data upon the principal materials used in the industry are obtained, as well as the formation of a collection of international statistical data.

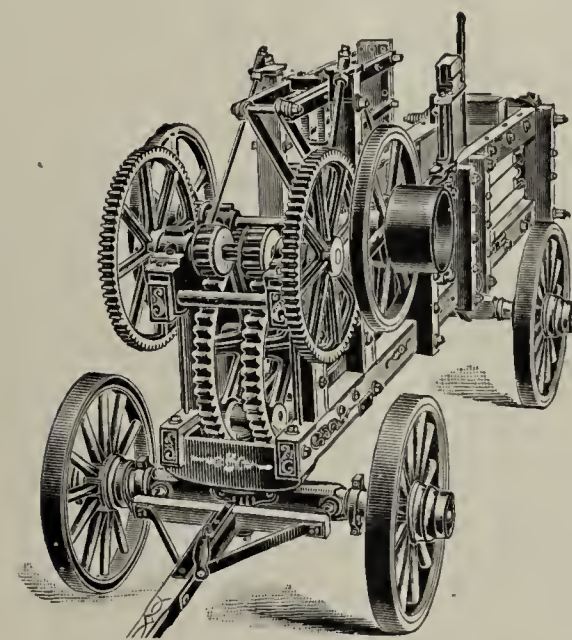
An International Exposition of Housekeeping Articles will be held at Antwerp in April of next year. The exposition will embrace fifteen divisions, among which will be articles of food, clothing, household and kitchen fittings, implements, etc., ap-

purtenances to dwellings (furniture, drapery, wall paper, bathing and heating arrangements).

Some additional details have been secured about the exposition at Tourcoing, France, which was announced in our last issue. This will be a particularly important event in the textile industry, as this city is located in the center of the wool-growing industry of France. There will be a great variety of looms displayed, and these will be shown in operation every day from 3 to 5 p. m. There will be a section devoted to mechanics in general, and one to industrial chemistry. There will be sections also for tapestry, carpets and hangings, and an agricultural section. In this exposition technical instruction, which has reached such a high degree of perfection here, will be an interesting feature, and the fine arts section will also be made attractive.

THE COLUMBIA HAY PRESS.

The Ann Arbor Hay Press can hardly be referred to under the head of news, for this piece of machinery has been in service for over seventeen years. This press has, of recent years, been improved in a number of respects, and in this manner has been enabled to make some speed records which are regarded with pride by the manufacturers. This machine has held its popularity during the generation which it has been on the market, and in



the meantime other devices of this character have forged to the front and fallen back to the rear again. A view of the Columbia press is shown herewith. It has a number of novel features in its construction, one of the most notable and newest of which is the friction clutch fly-wheel, regarded to

be a strong feature when compared with other machines. This clutch operates automatically, and releases itself from the shaft instantly in case of any accident which would cause the machine to stop suddenly. The wearing parts are of leather and easy to replace and adjust. This feature is said to keep the repair bill down to a minimum.

The block dropper on a hay press has the advantage of permitting the feeding to be done by an inexperienced person, and the dropper of the Columbia has several valuable qualities. It works from either side of the press. It cannot make a mistake, for if swung into dropping position at the wrong time, it refuses to operate. The gearing and feeding are both powerful. The gears are wider and heavier than commonly used.

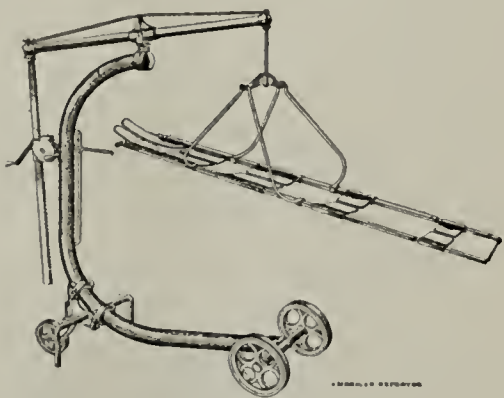
A record for handling material which this company is proud of was made by the machine owned and operated by George Sleet, Ellensburg, Wash. It is an 18x22 machine with a 32-inch stroke. In ten hours this press took care of 124,070 pounds of timothy hay in the field from stack. This is regarded as such an important achievement that an affidavit signed by members of the crew was secured to back up this statement.

NEWEST AMERICAN INVENTIONS.

TO MOVE A HOSPITAL PATIENT.

After a surgical operation has been performed in the hospital, it is desirable to remove the patient from the operating-table to a bed with the least possible physical or mental disturbance. Heretofore, this has been done by securing the services of a couple of sturdy men, and the patient is lifted from one point to another.

A new hospital apparatus has been invented by Richard Leffman, of Chicago, Ill., by which this operation is done by mechanical means in a more satisfactory manner. The elevator and truck embodied in this invention comprises a supporting standard of bent tubing to form a base portion and an upright portion. The forward end of the base portion has an axle fixed to it with a pair of wheels. At another point is fixed a third wheel of the caster type. Thus it will be seen that the truck is supported on three wheels. To prevent any possibility of the truck tilting sideways to any considerable degree, a bracket is provided with two downward projecting feet terminating at a



point just above the floor. At the upper end of the supporting standard there is suspended a separable carrier which is capable of being raised and lowered by means of a lever. The carrier is built in two parts, the division being through its length and the parts being secured by means of chains. In practice it is designed to lower the carrier from above the patient, one-half falling on each side. These parts are of such shape that they can be readily pushed between the patient and the bed, and the person having been thus worked into the carrier, the parts are locked together. The patient is then raised from the bed and, while suspended in the truck, may be gently conveyed to another bed or ward.

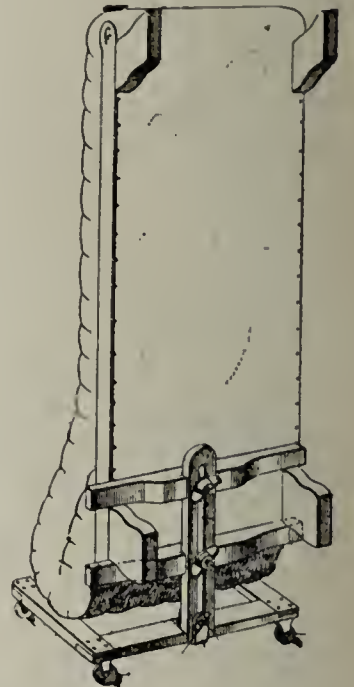
REAMING RIVET HOLES IN STRUCTURAL IRON.

In the assembling of iron and steel structural work considerable difficulty is often experienced in the failure of the holes in the different parts to register properly. A recent invention patented by John J. Nolan, of Brooklyn, N. Y., a light, compact and easily set-up appliance is provided whereby the juxtaposed holes in the various classes of structural metal-work may be readily reamed, so as to correspond in position. Mr. Nolan's invention consists of a drilling attachment comprising a rotary spindle, and a bearing in which the spindle is mounted, an offset being located on the bearing. Intermeshing gears are mounted on the spindle and in the offset. Tool receiving means are operatively connected with the offset gear. A bracket is detachably engageable with the work to be operated upon the bearing, being mounted to move longitudinally in the bracket. Means are located in the bracket for preventing other than longitudinal movement of the bearing with respect thereto.

SOFA STANDS ON END.

In the furniture store, the sofa and couch department is somewhat restricted in the matter of goods on display by reason of the fact that the articles on show take up so much floor space. A dozen or so of these pieces would not comprise much of a display, and yet it would tax the capacity of any but a large establishment.

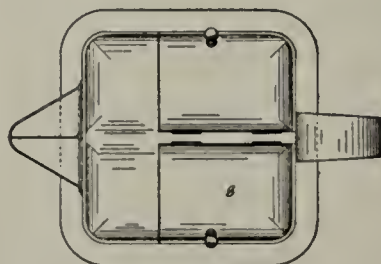
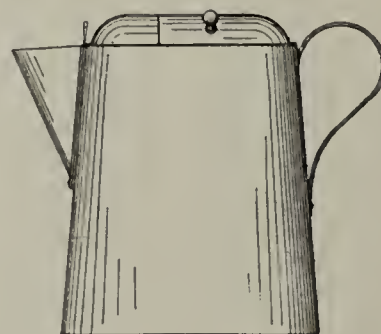
In order to make more room for the proper exhibit of these goods and permit the carrying of larger stocks a stand has been devised which holds a sofa or couch on end, as shown. This enables the piece to be examined carefully from every standpoint, and at the same time the space occupied is cut down to about one-quarter that required when the sofa is standing on its four legs. This stand was recently patented by Albert E. Beall, of Clinton, Ia.



TEA AND COFFEE FROM THE SAME POT.

In the stories of mythology, we read of the individual who was supposed to be possessed of an evil spirit, the evidence being that the accused had a breath which was either hot or cold, according to his pleasure. This supposition was founded on the fact that he was seen to blow his breath on his hands to warm them, or to blow his soup when he wanted to cool it. A no less wonderful performance is that of a combined tea and coffee pot which has been recently invented by Charles B. Nebinger, of St. Paul, Minn., the object of which is to deliver tea or coffee as desired. The body of the pot is divided into two compartments

by a centrally located vertical partition, and is provided with a spout that communicates with the interiors of the two chambers of the pot through perforations formed in the front wall of the pot body. These perforations are controlled by a valve operated by a handle exposed near the top of the pot. That is, one side or the other is protected at all times, so that the pot can deliver from one compartment only at one time.



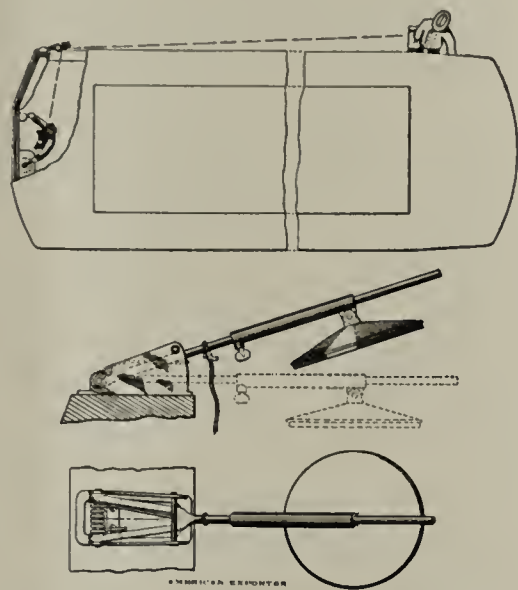
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Such a coffee-pot must be a boon to the proprietress of the boarding-house. As she presides over the table in her capacity of pourer, she can fill Mr. Brown's cup with coffee, and by a mere touch may change the stream issuing from the spout to tea for Mr. Black. This performance is only rivaled by that of the magician who takes wine and water from the same bottle.

MIRROR FOR THE MOTORMAN.

A very large percentage of the accidents which occur on electric passenger lines are due to the premature starting or the very sudden stopping of the car, as the passenger is alighting or boarding the vehicle. In many countries, particularly the United States, the electric cars have grown to very large proportions, and the result is, they carry so many passengers that the conductor must necessarily spend a great deal of time inside the car, engaged in the collection of the fares. Thus, it is a very simple thing for him to make a mistake and ring the bell to start before the passenger is quite on the car.

To avoid such accidents as these Robert Fyfe, of St. Louis, Mo., proposes to secure a mirror on the front of the car so that the motorman can at all times have a view of the rear part of the car. This is shown herewith. The mirror is round and mounted in such a manner as to be adjustable at the will of the motorman. Thus, without leaving his post, he is enabled to see everything which may be transpiring about the rear step, and, before moving the lever of his controller, can ascertain if the step is entirely clear.



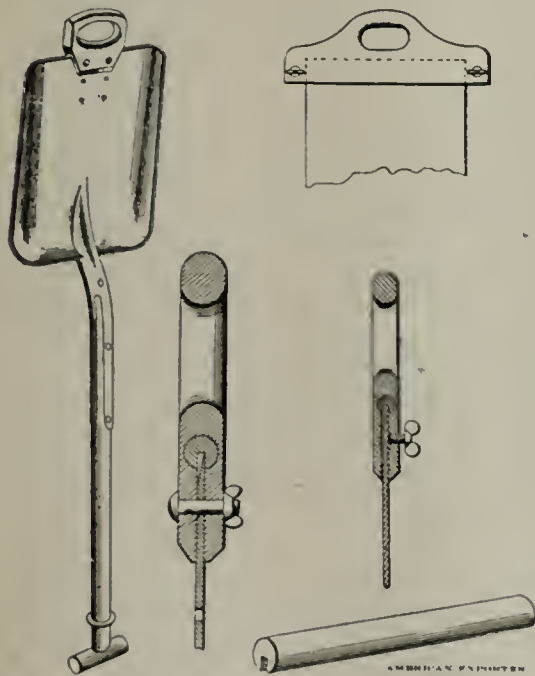
TWO HANDLES ON THE SHOVEL.

At a first glance one may be apt to question the utility of a double-handled shovel, particularly when one of these appears, as in the illustration, on the cutting edge of the implement. The

shovel shown forms the subject of a recent patent, and this improvement was suggested to the inventor, William P. Burnitt, of Greenwood, Miss., by witnessing street laborers making use of the handle as a tamping tool, in replacing earth that had been taken from a trench.

The double use for this implement in its present form can hardly be satisfactory,

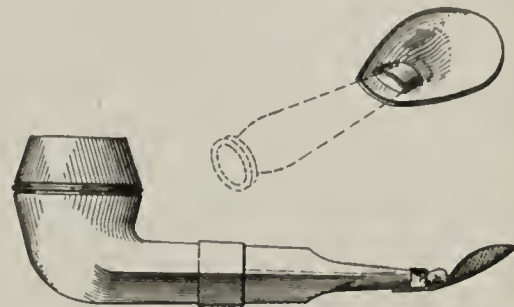
because it is difficult to apply force to the sharp edge of the shovel, but with this properly protected by a handle, which can be conveniently removed when not in use, and carried in the pocket of the laborer, it may be capable of very effective work. Means are provided for securing the handle in place, and yet permitting of its ready removal when it is desired to make use of the implement for the purpose of turning up the soil.



TONGUE SHIELD ON THE PIPE.

The tobacco pipe is affected almost over the entire world and any improvement or change made in it must be of general interest. Cancerous growths of the tongue have been laid to the habit of pipe-smoking—whether with justice or not, is another matter; but the fact is that there are many instances of the formation of cancer at the very point where the stream of nicotine-laden smoke from a pipe or cigar naturally strikes the tongue. Many inventions have been devised with the object of overcoming this evil. Most of them have been in the direction of clarifying the smoke by one means or another before it leaves the pipe.

An entirely new thought in this line consists of mounting a shield on the bit of the pipe to protect the tongue. This device forms the subject of a recent patent granted to Harry Gardner, of Washington, D. C. The shape of the shield is shown in the accompanying illustration. It is made of rubber, so as to readily adjust itself to the shape of the tongue. The inventor claims that this forms an effectual shield, protecting the tongue from the heat as well as the nicotine in the smoke.

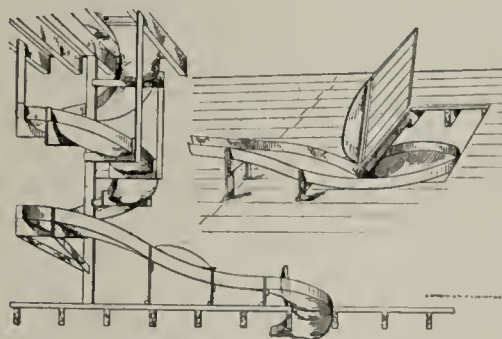


CHUTE FOR MERCHANDISE.

A system of handling merchandise in a store or warehouse, which has the advantage of great economy when compared with the elevator and similar methods of moving goods, has been devised by Charles F. Cormack, of San Francisco, Cal., who has assigned his rights to the Haslett Warehouse Company, of Carson City, Nev. The cuts are self-explanatory. The system consists of a trough-like chute, in helical form, at a slope greater than the angle of friction along which the goods will move of their own weight. The patent also covers the intercepting devices at

each floor that divert the descending packages, as may be desired. The hatch doors are of such shape as to fit into the concave floor of the chute, and upon being lowered the packages stop at this point. The door

being raised permits the packages to pass along through one floor after another until reaching the ground floor or street. The chute is shown here suspended by wooden framing, but it is designed to support it also, around a central column or in any other manner that will permit of the desired convolution and slope.



The Typewriter in Diplomacy.—The typewriter played a conspicuous part in the Peace Conference at Portsmouth. Six Remington typewriters with Russian, French and English keyboards were in constant use by the Russian and Japanese plenipotentiaries, and the final draft of the treaty for engrossing was prepared on these machines. This recalls the fact that the articles of peace between Spain and the United States and between the British and the Boers were also written on the Remington.

NEWS OF THE EXPORT TRADE.

The American Bicycle Abroad.—Switzerland imports American bicycles at the rate of 6,000 a year. Our total export of bicycles in 1905, fiscal year, amounted to \$1,378,428.

Freight Cars for Japan.—Japan has given an order to the American Car and Foundry Company for 1,000 more freight cars. This is in addition to the 500 which the company is now building for Japan.

Typewriters for Cuba.—Mr. T. J. Maher, the export manager of the Blickensderfer Manufacturing Company, is in Cuba and Mexico in the interest of the export business of that company.

Japan After Argentina Wheat.—The Japanese Government is giving encouragement to the establishment of a steamship line to South America, in order to have access to the wheat fields of Argentina. The consumption of wheat in Japan has increased greatly in the past few years.

Counterfeiting the American Shoe.—The alarm in Germany over the progress of the American-made shoe is increasing, and is responsible for the extensive imitation of American styles and patterns by German manufacturers. It is said that they even go so far as to put the stamp "American made" upon the goods.

Japan's Large Leather Order.—The statement was recently made in a cablegram that the Japanese Government was in the market with an order for 6,000,000 square feet of upper leather to be used in making shoes. Several large orders of this character have already been placed in the United States.

Control of Brazilian Steamship Lines.—It is stated that the New York syndicate which recently bought the Novo Lloyd Brasileiro, paid \$3,200,000 for the property. Eight new vessels will be built for the north and south coast lines, and direct connection between New York and Para will be secured.

Rapid Run to Hong Kong.—The British ship Sutton Hall arrived at Hong Kong from New York recently, after a voyage of forty-eight days, a remarkably quick run, and, according to some shippers, a record voyage for a cargo boat. In the seven weeks, minus a day, the vessel logged 11,580 miles.

Opportunities in the Philippines.—According to a Manila newspaper, Representative Hepburn, of Iowa, sees in the Philippines a big opportunity for American trade. He believes that every facility should be afforded the interchange of non-competitive products between the Philippines and the United States, on a reciprocal basis.

Switzerland Favors American Goods.—The Diet of Switzerland has decided to allow, from January 1, 1906, American goods to be entered under the rates of the Swiss treaty tariff. Hitherto many American products had to come under the Swiss general tariff, by which rates were much higher. This decision gives to American goods the benefit of the most favored nation clause.

August Imports Growing.—Figures for the port of New York for August show that the importations during the month amounted to \$52,703,768.10, an increase of about \$8,000,000 over

the same month last year. The total appraised value of precious stones imported in the month of August was \$2,275,873.59, an increase of 12 per cent. in comparison with the same month last year.

Promising Future for the Port of Manila.—Senator Warren is for tariff reform. He told the *Cablenews* representative that he thought the Philippines should be placed on the same footing as Porto Rico. He asked many questions as to the native politicians and was interested in an account of the different Filipino groups. He believes that there is a great future before the port of Manila, and will help to hasten its progress.

Coat-of-Arms for Canal Commission.—The coat-of-arms adopted for the use of the Panama Commission and zone government consists of a shield showing in base a Spanish galleon of the fifteenth century under full sail coming head-in between two high banks—the sky being yellow with the glow of sunset—in the shield the colors of the arms of the United States. Under it is written, "The Land Divided, the World United."

Cuba's Growing Foreign Trade.—The total imports of Cuba for the fiscal year which ended in June amounted to \$83,951,000, of which \$37,601,000 came from the United States, \$5,104,000 from Germany, \$9,686,000 from Spain, \$4,618,000 from France, \$12,589,000 from Great Britain, and \$14,353,000 from other countries.

The exports during the same period amounted to \$99,116,000, of which \$84,655,000 went to the United States, \$6,190,000 to Great Britain and \$3,783,000 to Germany.

The imports from the United States showed an increase of \$9,000,000, from Germany \$462,000, from Spain \$747,000 and from Great Britain \$94,000.

The total imports for the fiscal year of 1904 amounted to \$70,156,000, and the exports \$93,122,000. The above does not include money, the total imports of which were \$9,064,340, against \$4,336,130 during the preceding year. The exports of money amounted to \$1,960,683, against \$1,276,472.

Eight Months' Export Business.—The exports of the United States for the first eight months of the calendar year exceeded those of the same period last year by \$115,149,568, the total value reaching \$966,353,025. The imports for the same months, valued at \$770,345,809, show a comparative increase of \$103,076,445. The foreign trade of the United States for that period was therefore \$218,228,013 greater than in the corresponding months of 1904, and the balance of trade in favor of this country was \$196,007,216, against \$173,934,093, a gain of \$12,073,123.

The imports of gold in the eight months amounted to \$24,699,625, a comparative falling off of \$39,754,010, and the exports aggregated \$41,265,017, a decrease of \$39,030,443, leaving a net gain of \$723,567.

For the month of August the exports, amounting to \$117,453,581, the largest ever reached for that month, exceeded those of August, 1904, by \$25,199,700. The imports, aggregating \$95,826,548, were \$8,088,680 greater than last year. The gold exports for the month aggregated \$274,153 only, against \$10,762,818 in August of last year, and the imports were valued at \$3,146,223, against \$7,764,491 last year.



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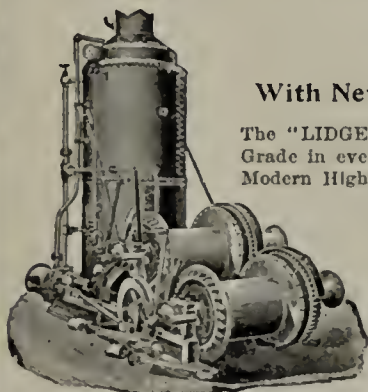
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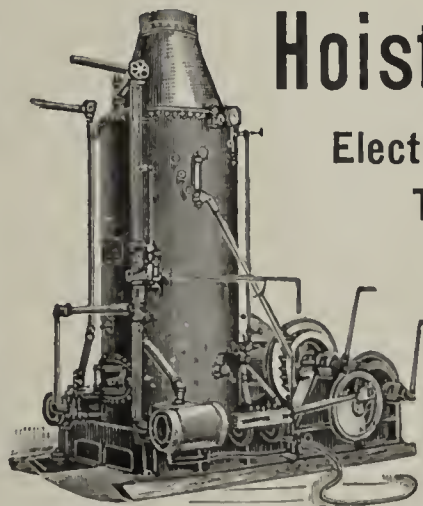
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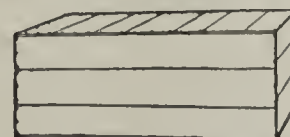
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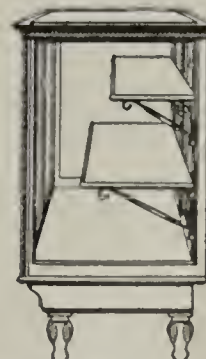
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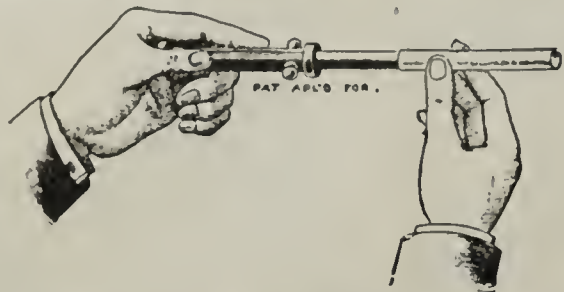
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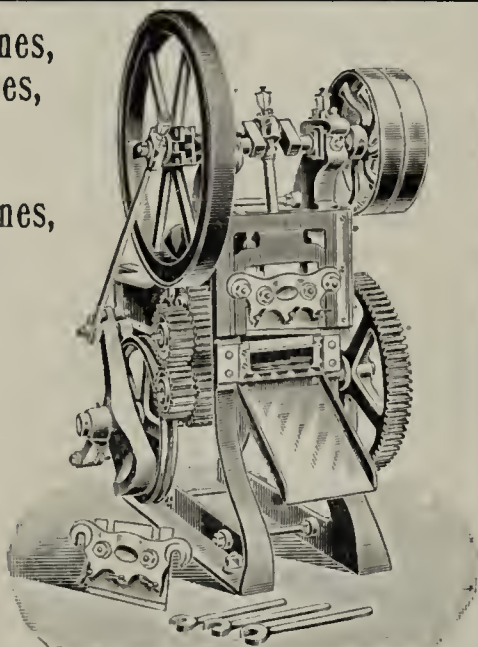
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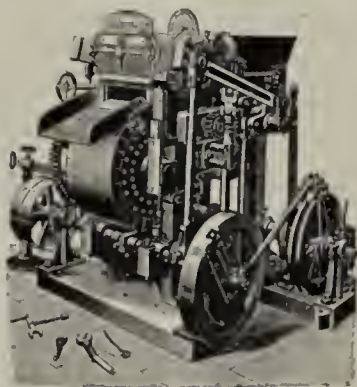
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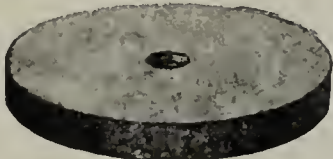
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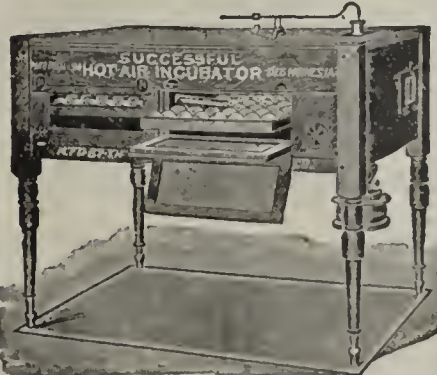
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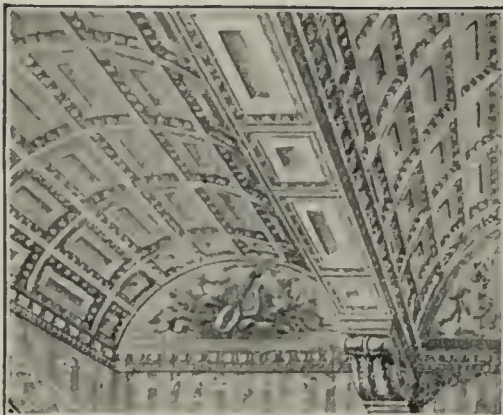
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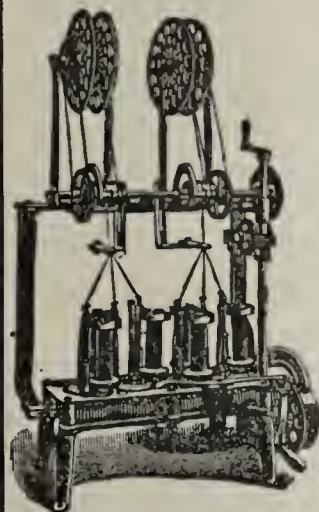
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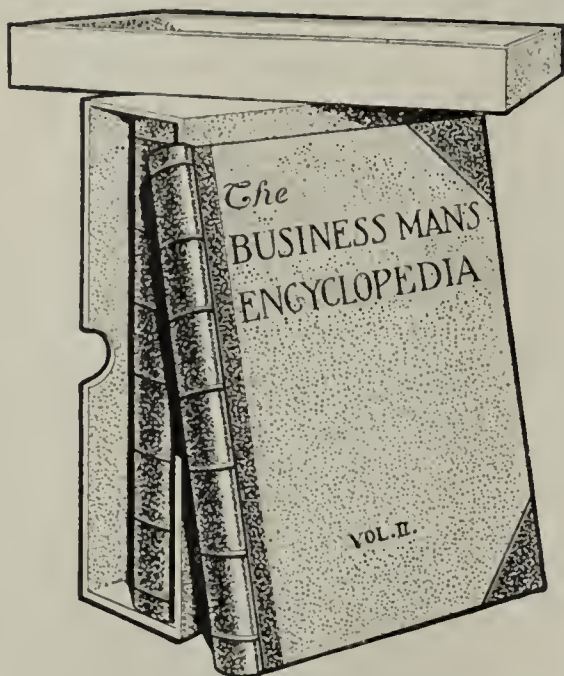
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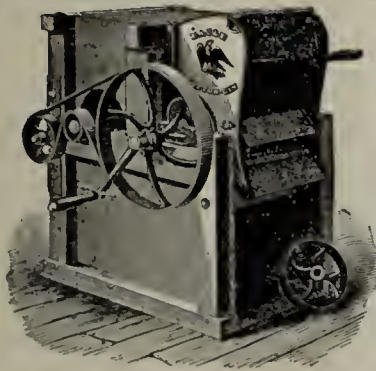
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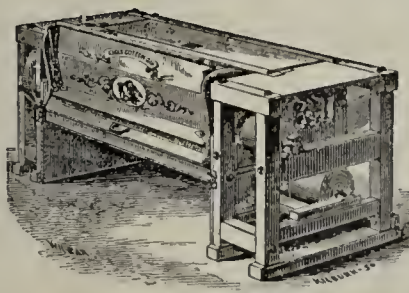


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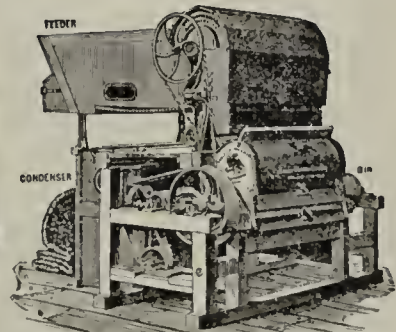
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For further details Illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.

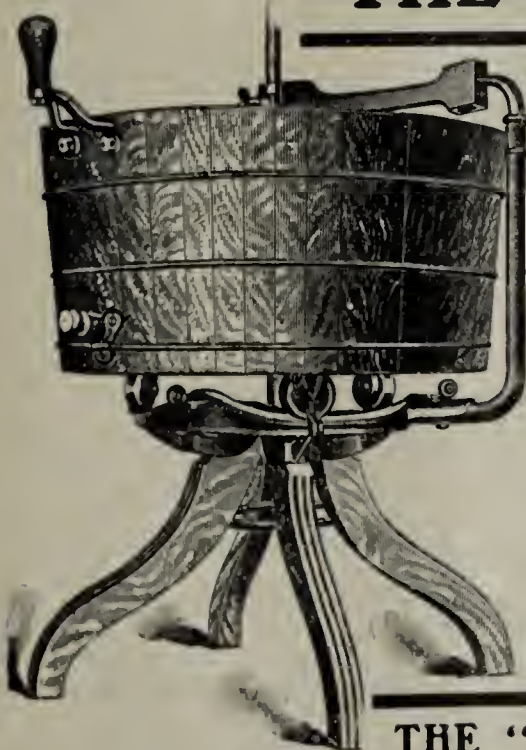


Power Gin with 10-inch Saws, with Feeder and Condenser

CONTINENTAL GIN CO., Inc., BRIDGEWATER, MASS., U. S. A.

Successors to EAGLE COTTON GIN CO.,

THE WASHER THAT WORKS ITSELF.



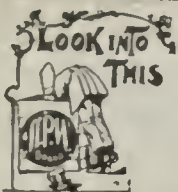
Our new "1900 Gravity Washer" works by its own weight, as the name suggests. Does *three-fourths* of the work of washing because it works by gravity. On bottom of Tub are fastened four large casters, having wheels that ride around on this track. There is a *pivot*, too, on the bottom of the Tub, to keep it swinging in its right position, with the wheels always in the track.

When you want to *wash*, you put the Tub on its pivot, with its wheels on the track. Then you throw the dirty clothes into it. Then you turn on enough hot water and soap suds to just *float* the clothes. Then you lay the disk on top of the clothes. Then you put the square rod down through the cover until it rests in its socket on the disk. Then you turn a thumb-screw in the arm, which sets the rod and holds it with the disk in a fixed position. Now we're all ready for this famous easy way of washing.

See the handle on the edge of the Tub at its top? You grasp that handle and *revolve* the Tub one way as far as it will go. Then you let it go back to where it came from, and revolve it as far as it will go in the *other* direction. Then you repeat the first motion. Observe that there is no *rubbing* of the clothes, as on Washboard or other Washing Machines. No scrubbing, stretching, Wear and Tear, on the garments. Just soapy water driven *through the meshes* of the clothes by the revolving of the Tub, and that same water squeezed out of them at each half-revolution and each rise of the Tub. This is why the finest lace can be washed by the "1900 Gravity Washer" without fraying a thread, or tearing a button-hole, or breaking a button. And it will wash dirty overalls or heavy blankets with equal ease and rapidity. A child could run the "1900 Gravity Washer," and could wash a Tubful of very dirty clothes in six minutes better than they could be washed by hand in twelve to fifteen minutes.

Isn't it plain that this is a washing machine that you can sell readily and in large numbers? We export them to all parts of the world. Write us to-day for complete information and export prices. Orders filled through commission houses or direct.

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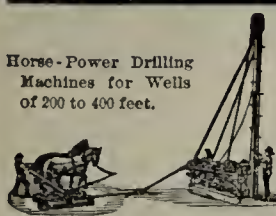
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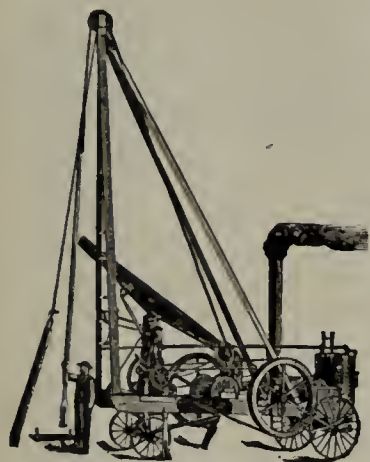
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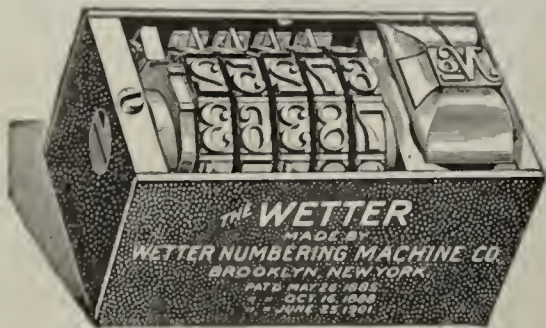
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Model 148	6 Wheel	No 123456	21.00
Model 215	5 Wheel	68561220	30.00
Model 216	6 Wheel	68561220	33.00
Model 138	5 Wheel	123456	25.00
Model 139	6 Wheel	123456	28.00
Model 145	5 Wheel	30685	27.00
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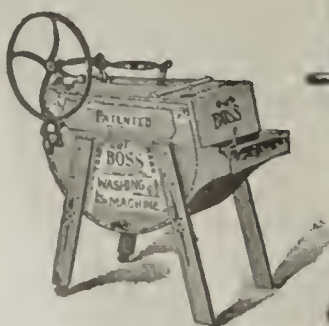
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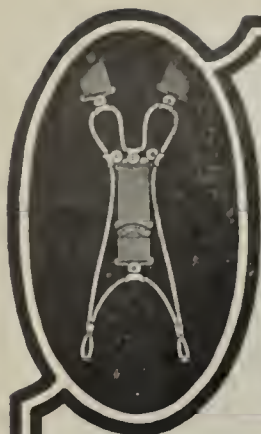
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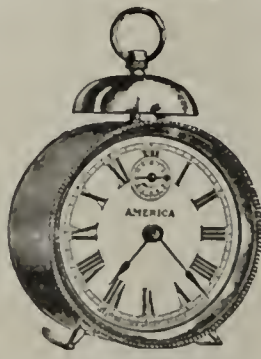
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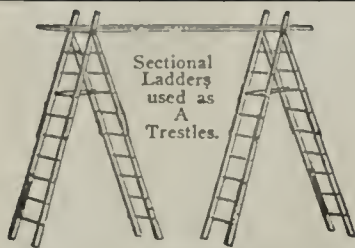
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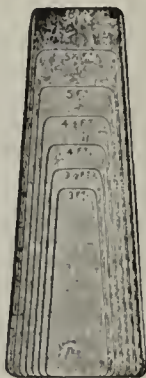
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The assortment is small. All parts are interchangeable, making every size bookcase possible from the same stock. Require but little space in warehouses. Deliveries can be made in 30 days, and by using our special code in 20 days.

Cut No. 1 shows three-section case complete; weighs 135 pounds gross, 100 pounds net, and of 6 3/4 cubic feet. This cut represents the entire line of sizes, from which can be made a case for 10 books or 10,000 books, according as the books accumulate. Special export price, each \$11.99 boxed, f. o. b. New York.

Cut No. 2 shows six-section case, with top and base set up, and the same case boxed K. D. (flat), ready for shipment, weighing 200 pounds gross, 150 pounds net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses or on shipboard. Price complete, as shown, each \$20.54 boxed, f. o. b. New York.

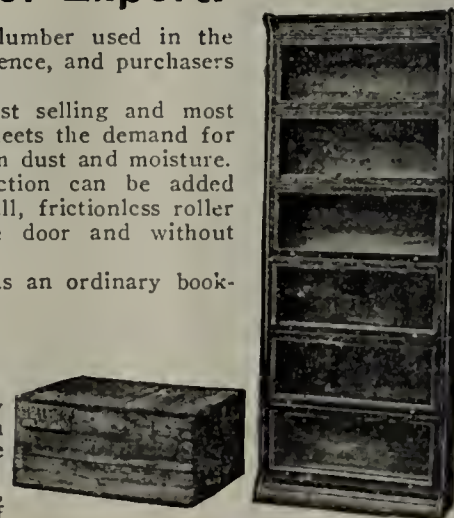
Cut No. 3 shows our knock-down (flat) construction. It is put together without nails, screws or dowel-pins. The irons that are fastened to the shelves have upper and lower tongues that fit in the grooves of the bases, center sections and top sections, thereby binding all rigidly together. Price quoted (United States gold or its equivalent) includes boxing for steamer and delivered f. o. b. cars at New York City.

To secure the full benefit of these prices, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Be sure to specify "GUNN" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order.

Our catalogue illustrates and describes all the various styles of sectional bookcases and filing cabinets made by us, and is mailed postpaid.



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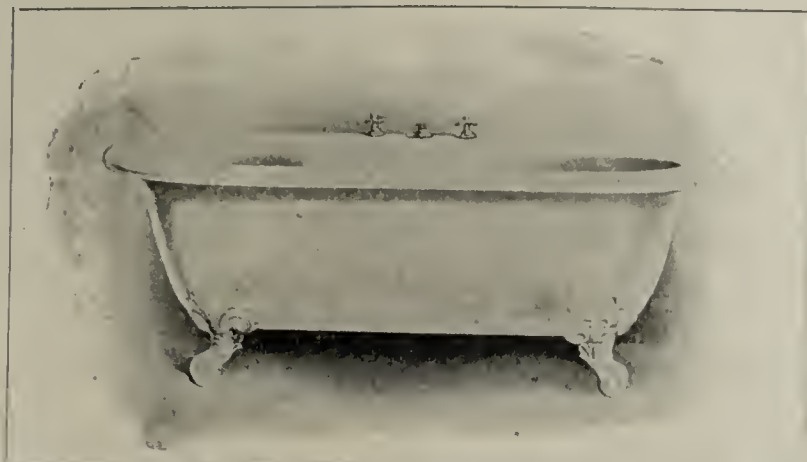


Cut No. 2.



Cut No. 3.

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THE LITTLE GIANT LAUNDRY AND TANK HEATER

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No. A20.

No. A20.—50 inches long; 30 inches wide; 48 inches high. Weight, 230 pounds.

A modern neat and practical desk. Quarter-sawed white oak front. Drawers have moulded fronts, carved wood pulls. Center drawer with flat-keyed lock. 14 pigeon-hole boxes with quartered-oak fronts and bronze label-holder pulls. Closed paneled back.

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Can furnish drawers both sides if desired. Finish—Fine gloss finish, golden oak.

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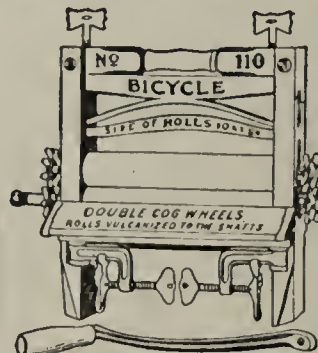
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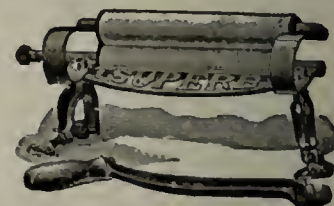
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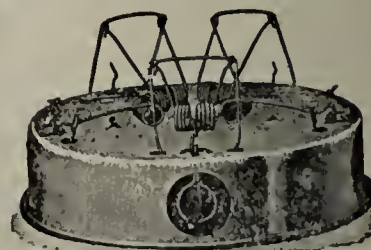
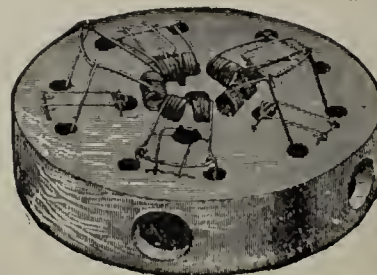


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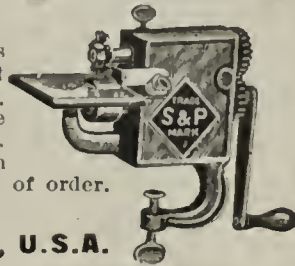
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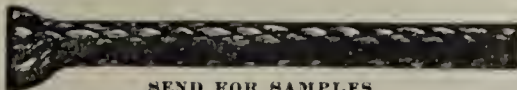


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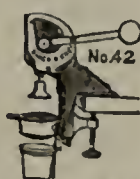
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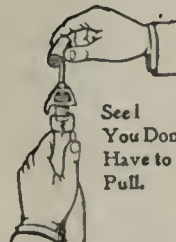
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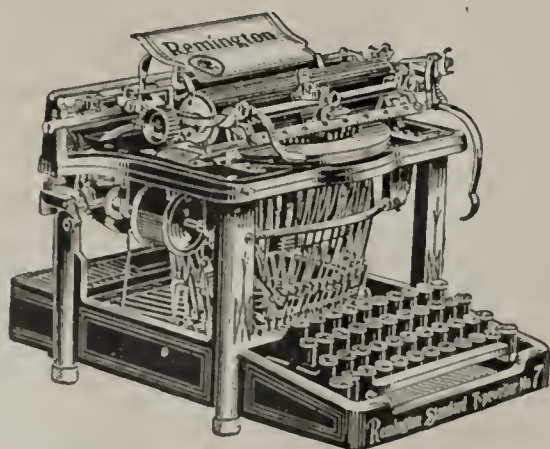
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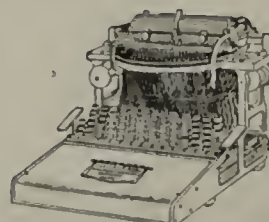
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The drawer is made with OAK OR BLACK WALNUT FRONT, varnished and polished. The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17 x 18 in.



Style No. 2

The Lock Has 32 Combinations, which can be changed instantly, and CANNOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. THE ALARM does not sound except when an attempt is made to open the drawer by an unauthorized person. This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

"SECURITY" Cash Recorder



No. 85.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

Write for Circular and Prices to

HOUGH CASH RECORDER CO.,
INDIAN ORCHARD, MASS. U. S. A.

IRVING'S NEW WIZARD OR "GY-ROTARY" TOP

"The Quickest Money-Maker Ever Placed Upon the Market."

Admittedly the Greatest American Toy. Its wonderful performance baffles the scientists, interests the adult and delights and educates the child; affords an endless source of entertainment.

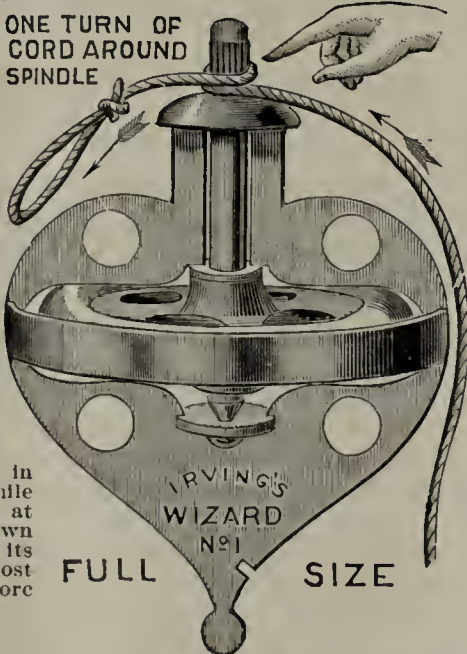
THIS MECHANICAL PARADOX is constructed on accurate scientific principles; a perfect little high-speed machine, made of STEEL, nickel-plated; capable of 20,000 revolutions per minute, and can be put in motion by a child in three seconds. Can be handled while running at full speed and placed at any angle, where contrary to known laws of gravitation it maintains its equilibrium. Performs over 40 most interesting tricks, or 15 times more than all other tops combined.

FOR EXPORT
ONLY—\$9.00.

Upon receipt of \$9.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, one gross (144) IRVING'S NEW WIZARD OR "GY-ROTARY" TOPS. Weight, boxed, 30 pounds. Size of box, 17½ x 8½ x 8½ inches.

ORDER NOW. YOU WILL
SURELY WANT MORE.

Wizard Novelty Co., Inc.,
Philadelphia, Pa., U. S. A.



Patent Applied for July 19, 1904.



A few of the many positions in which this wonderful top will spin.



EMBROIDERY HOOPS

Made from selected light-colored hardwood, finished perfectly smooth and true in shape.

Sold in over 25,000 stores throughout America and other countries

The different style hoops are put up separately, ½ dozen solid pairs of a size in a covered package.

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The most popular Hoops on the market. Made in sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter. It's the Felt-Cushion or band around the inner hoop of the "Duchess" which holds tightly stretched light or heavy fabrics equally well, and renders slipping impossible.



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The perfect adjustable Hoops. Sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter. The Bow-Spring in the "Princess" adjusts itself to different thicknesses of material, holding the fabric firmly and without injury.



Royal-Oval Hoops

Made in 2 sizes.

3 by 6 inches for small embroidering, especially desirable for working designs on stockings.

6 by 12 inches for drawn-work and large embroidering, having every advantage of a large 12-inch round hoop, with the convenience in handling of a small size.



Special-Select Hoops

Sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter.

These are low-priced, plain round wooden Hoops, lathe-turned, very smooth and carefully fitted.

SPRING-WINDING TOPS

No string—just wind them up, push on the stem and away they go spinning with great force. Any child can spin them. The most popular and fascinating tops on the market. Spin the longest.

"NEVER-STOP" HUMMING TOP

Made of metal and indestructible. Spun by an automatic spring device which cannot break or get out of order. It's a Beauty and a Great Hummer. Handsomely enameled in five colors. Packed one dozen in box, assorted colors.

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Cut is one-half size.



Cut about one-half size.

THE FAMOUS SPRING-WINDING FLAG TOP

The funnest top you ever spun. Spins on either end, or in the holder, when inverted and held in the hand. These tops are ornamented with the National Flag colors of any country desired.

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Can be made with good profit, and without previous experience on our

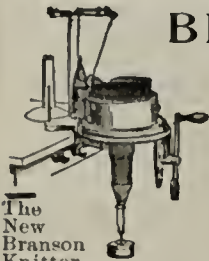
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Send for Export Catalogue No. 1.

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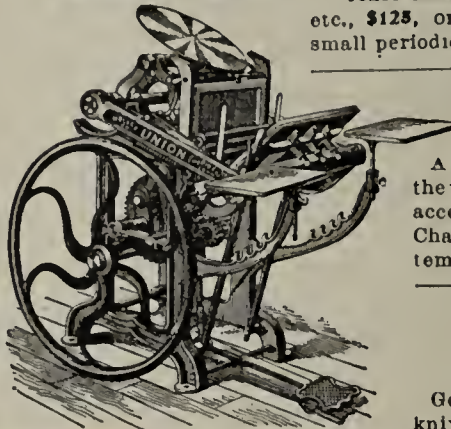


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

10x15-inch Press, with 10 styles of type, ink, etc., \$125, or with more type, rules, etc., for small periodical, \$200.

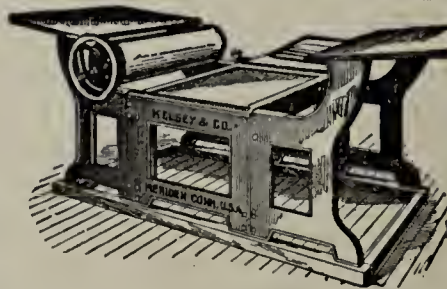


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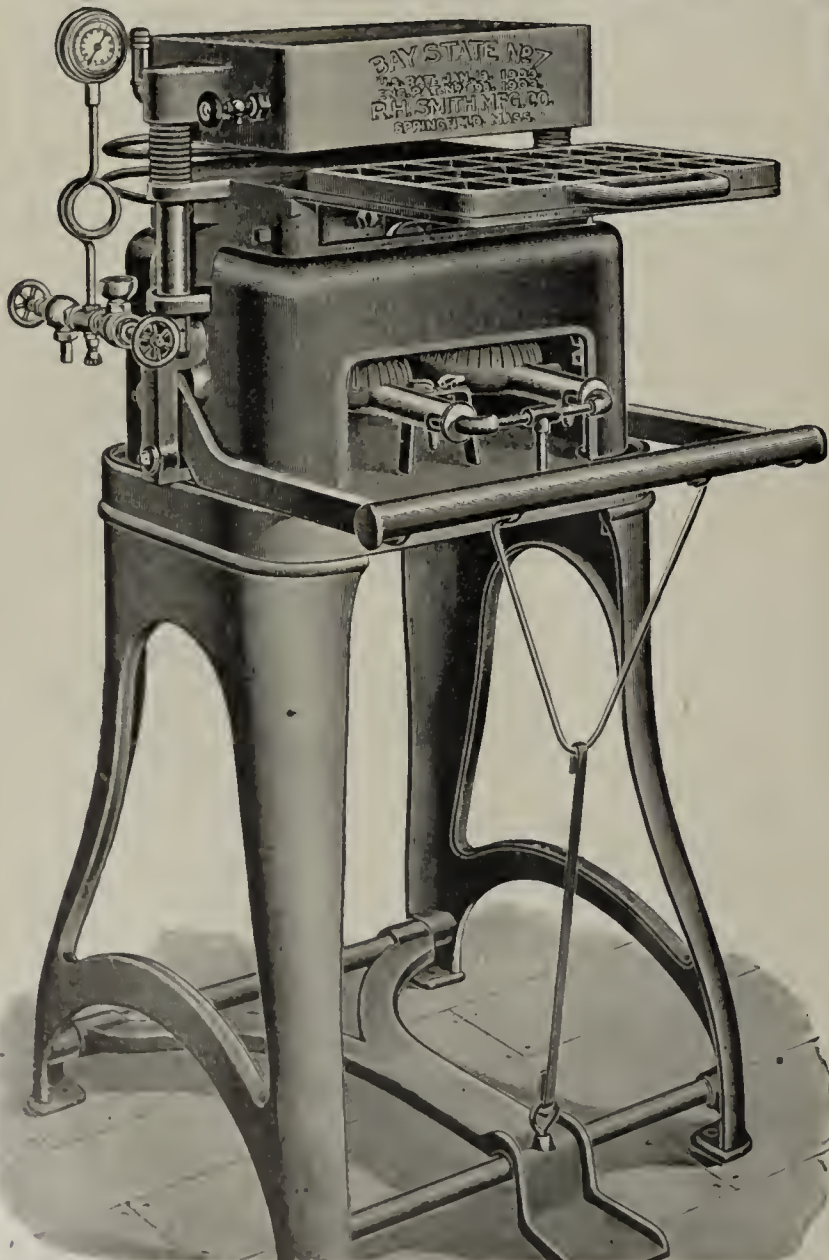


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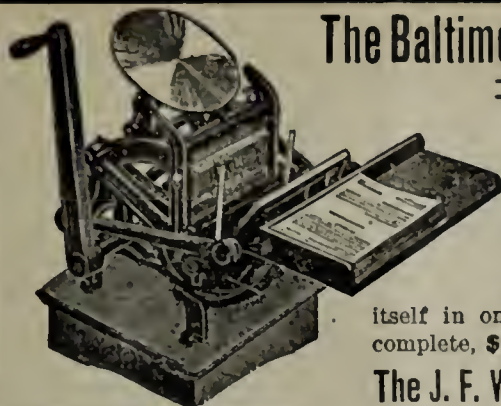
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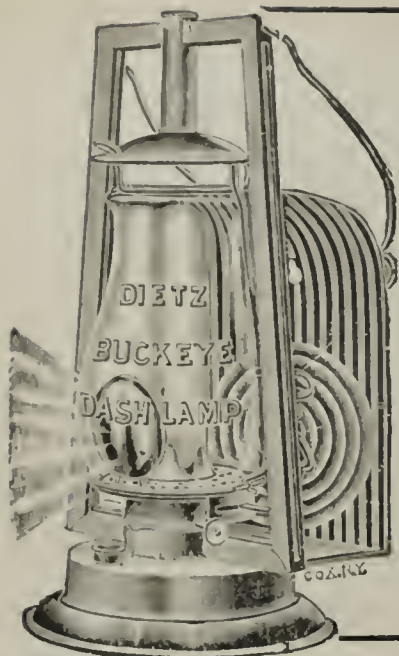
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This Is a Very Convenient Combination Lamp

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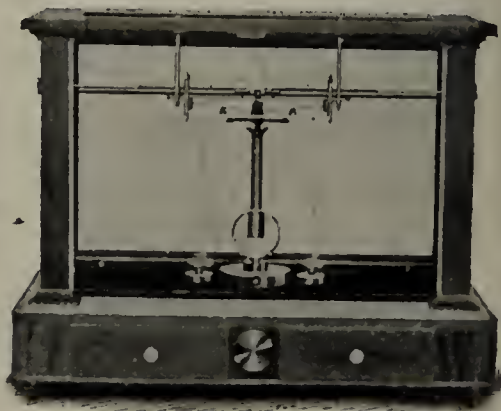
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Sensibility 200 Mg.



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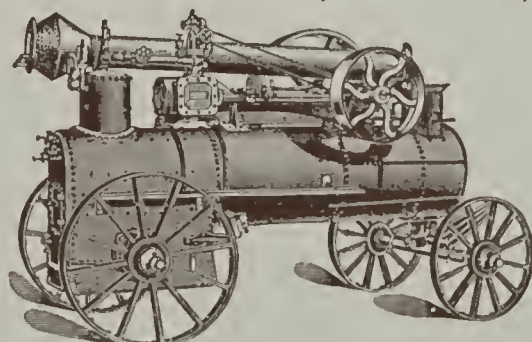
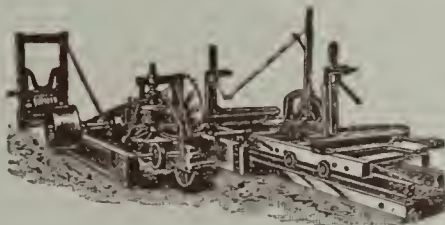
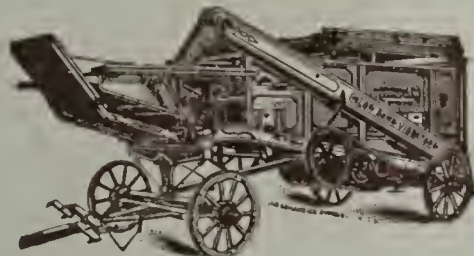
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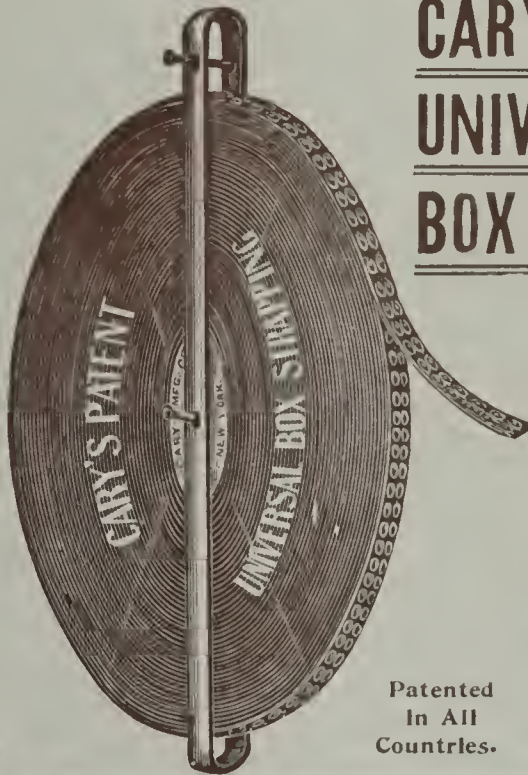
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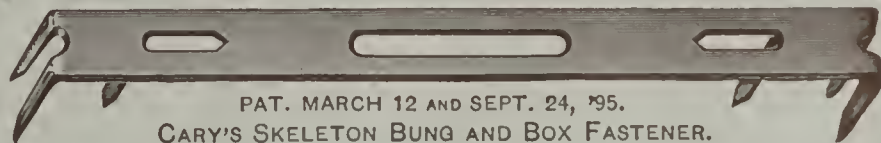
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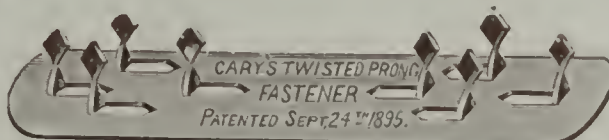


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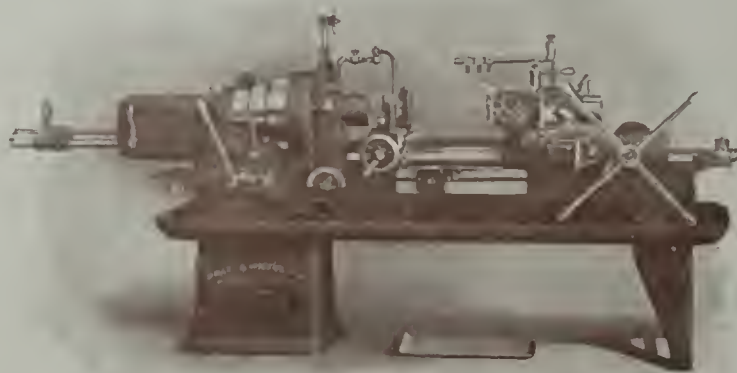
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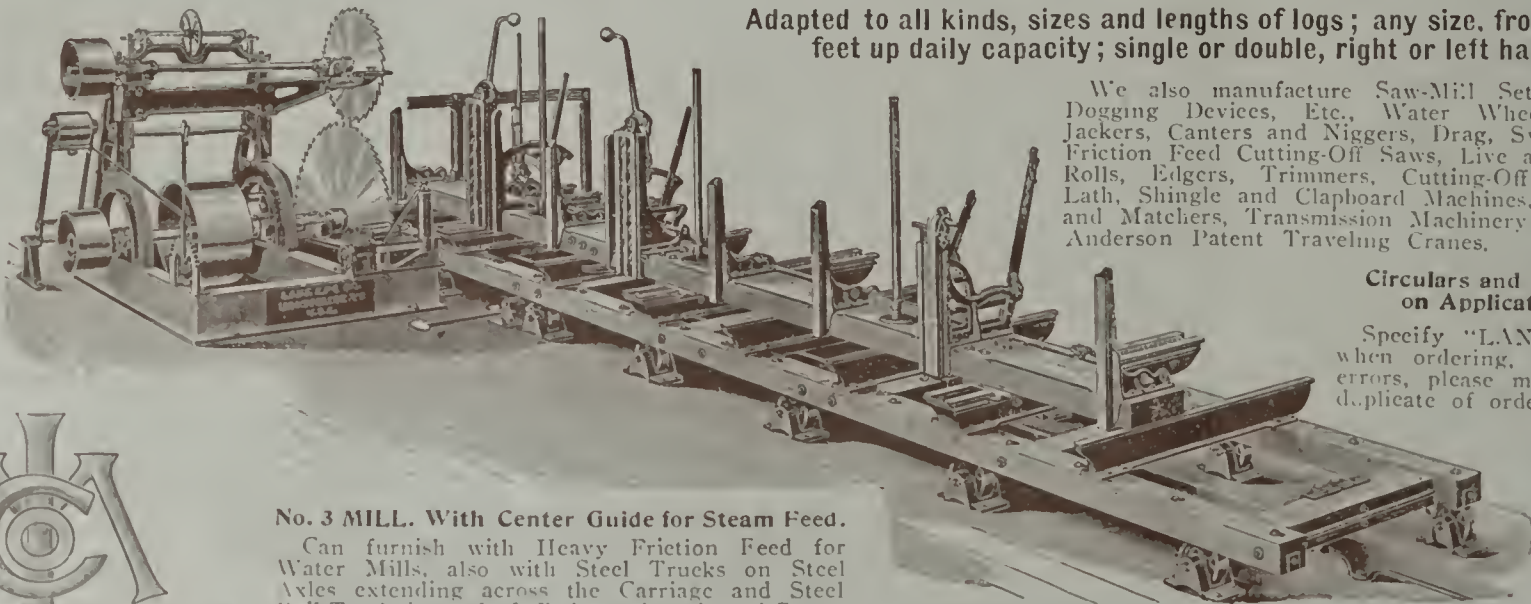
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Vol. LVI.

NEW YORK, NOVEMBER 1, 1905.

No. 6.

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Fitted with stiff
tongues, standard
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Studebaker
"Ideal"
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Vehicles for All
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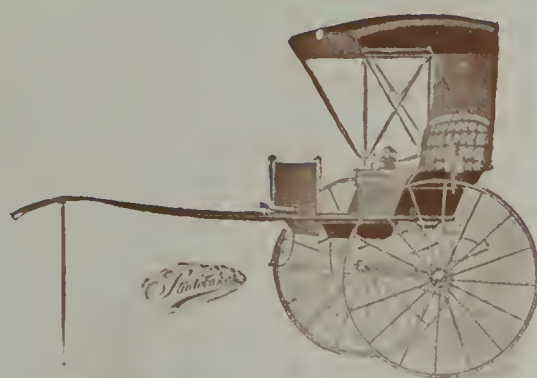
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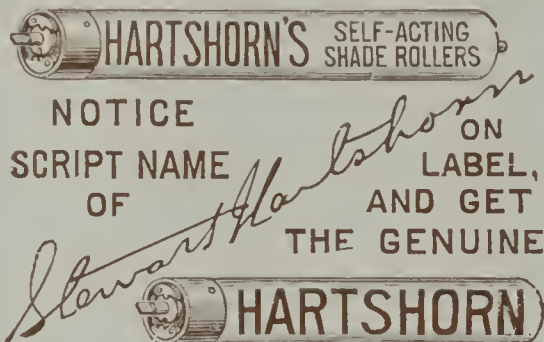
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Every regular Hartshorn Roller has the name STEWART HARTSHORN in script diagonally across label.



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The HARTSHORN is so built.

Therefore it is economy to use them.

They give no trouble.

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"Perfect" Lemon Squeezer No. 20.

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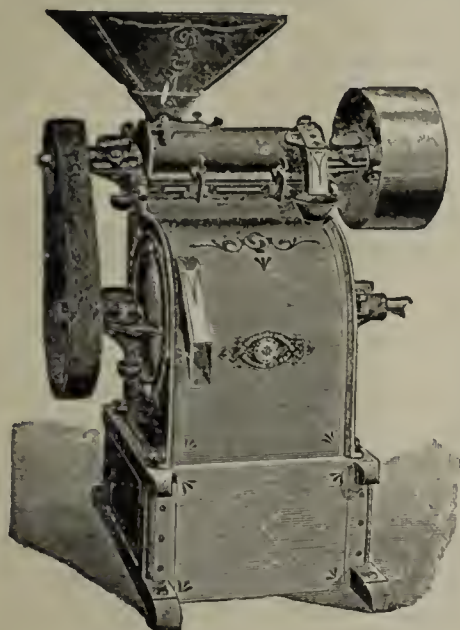
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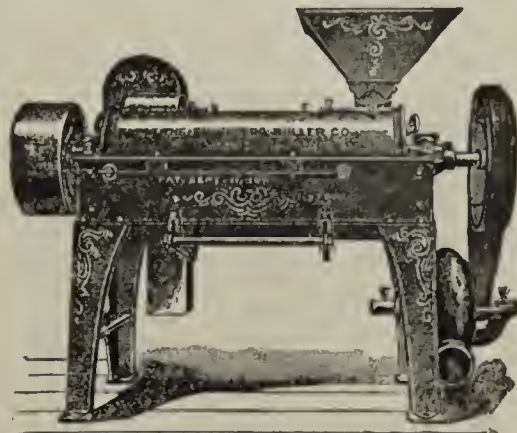


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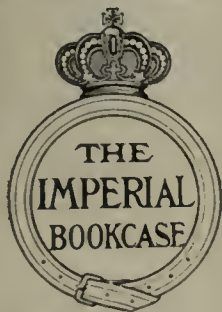


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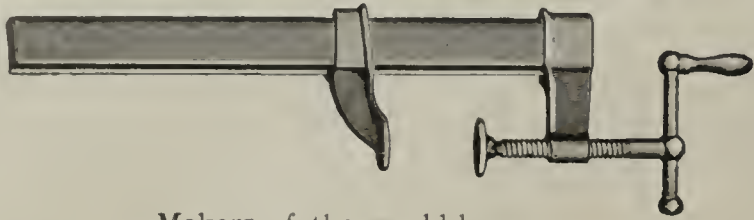
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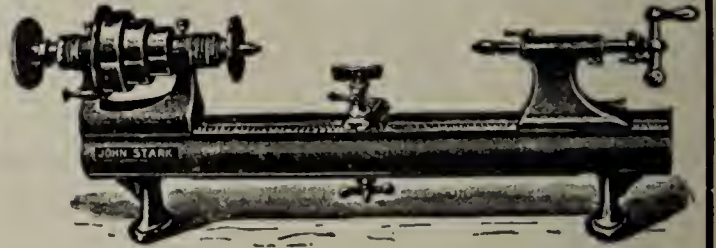
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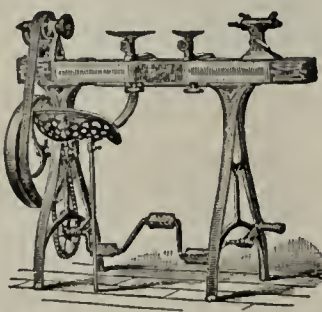
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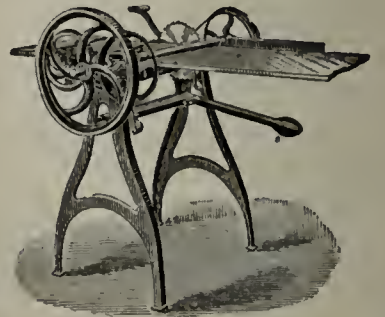
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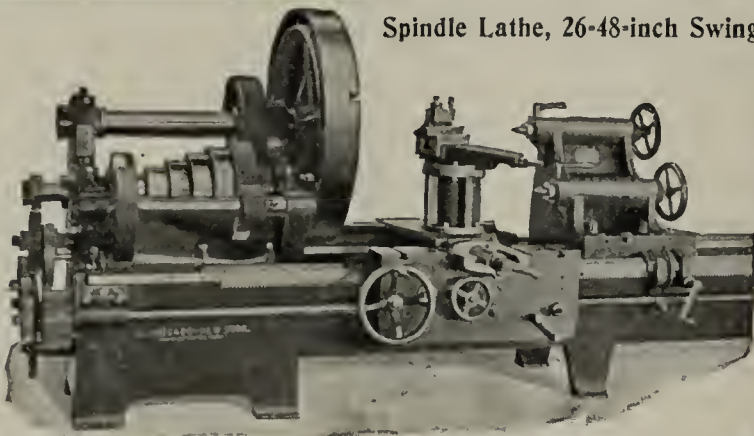
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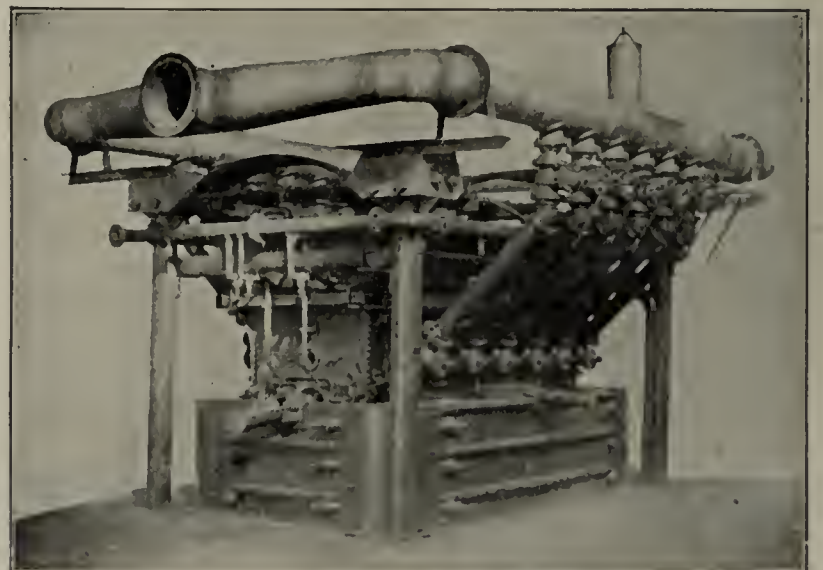
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What the German Government Thinks of Keystone Grease

On page 270, Vol. 52, of the Official Gazette of the Royal Prussian Mining Department, published by the Ministry of Commerce and Industries, there appears the following official statement:

KEYSTONE GREASE—Experiments have been made with Keystone Grease which was furnished by C. Henke in Witten-Ruhr, on the Gerhard Colliery in the Saar district. The grease possesses an exceedingly great lubricating power, and is furnished in three different consistencies:

No. 0. For heavy machinery. This brand cannot be used in lubricating cups worked by spring pressure.

No. 1. For medium weight machinery (applied in hand pressure lubricating cups).

No. 2. For light weight machinery and shafts (applied in hand pressure and open lubricating cups or in spring pressure cups).

Experiments have been made in the first place at the crank shaft journals and several other journals of the two engines which operated the coal washing plant at Louisenthal. The experiments were carried out in such a manner that during a number of working days one side of the engine was lubricated with Keystone Grease and the other with dynamo oil. The money saving obtained with Keystone Grease as compared with the oil amounted to 43 per cent. (after deducting the value of the oil which was recovered. In the same manner and at the same machines the shaft journals were treated with Keystone Grease No. 0, special hollow journal covers furnished by C. Henke, of Witten, being employed. The money saving obtained thereby amounted to 63 per cent. Keystone Grease has also been used successfully for rope pulley bearings. Steps have been taken for its further application in the collieries.

General Representative for the German Empire:

C. HENKE, = = **WITTEN, RUHR.**

Representatives for Holland: LAMBERT & CO., Rotterdam.

Keystone Grease in Deutschland

Auf Seite 270, Band 52, der Zeitschrift für das Berg- Hütten und Salinen-Wesen im preussischen Staate erschien folgender Bericht:

KEYSTONE-SCMIERE—Auf Grube Gerhard, Saarrevier, wurden Versuche mit Keystone-Schmiere von der Firma C. Henke in Witten-Ruhr gemacht. Die Schmiere besitzt eine ausserordentlich grosse Schmierfähigkeit und wird in drei verschiedenen Steifigkeiten geliefert.

Nr 0 für schwere Maschinen (diese Sorte kann nicht bei Federdruckbüchsen zur Anwendung kommen);

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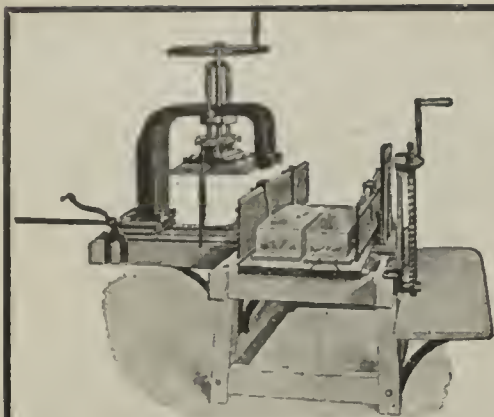
No. 2 für leichte Maschinen und Wellen (Anwendung bei Handdruck- und offenen Schmierbüchsen oder bei Federbüchsen).

Die Versuche wurden zunächst bei den Kurbel- und Fingerlagern der beiden Wäschebetriebsmaschinen zu Louisenthal in der Weise gemacht, dass während einer längeren Reihe von Betriebstagen die eine Seite der Maschine mit Keystone-Schmiere, die andere mit Dynamoöl geschmiert wurde. Hierbei ergab die Schmierung mit Keystone-Schmiere gegenüber der Olschmierung eine Geldersparnis von 43 vH. (nach Abzug des Werts des Wiedergewonnenen gereinigten Tropföls). In derselben Weise und an denselben Maschinen wurden dann die Achslager unter Verwendung besonderer hohler Lagerdeckel von der Firma C. Henke, Witten, mit Keystone-Schmiere No. 0 behandelt. Die Geldersparnis betrug hierbei 63 vH. Auch für Seilscheibenlager wurde Keystone-Schmiere mit Erfolg verwendet. Die weitere Einführung im Betriebe ist in die Wege geleitet.

Alleiniger General-Vertreter: C. HENKE

WITTEN, RUHR

Keystone Lubricating Company, PHILADELPHIA
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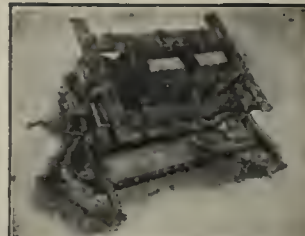
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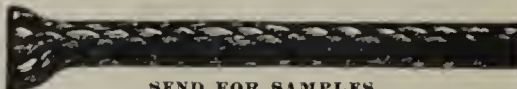


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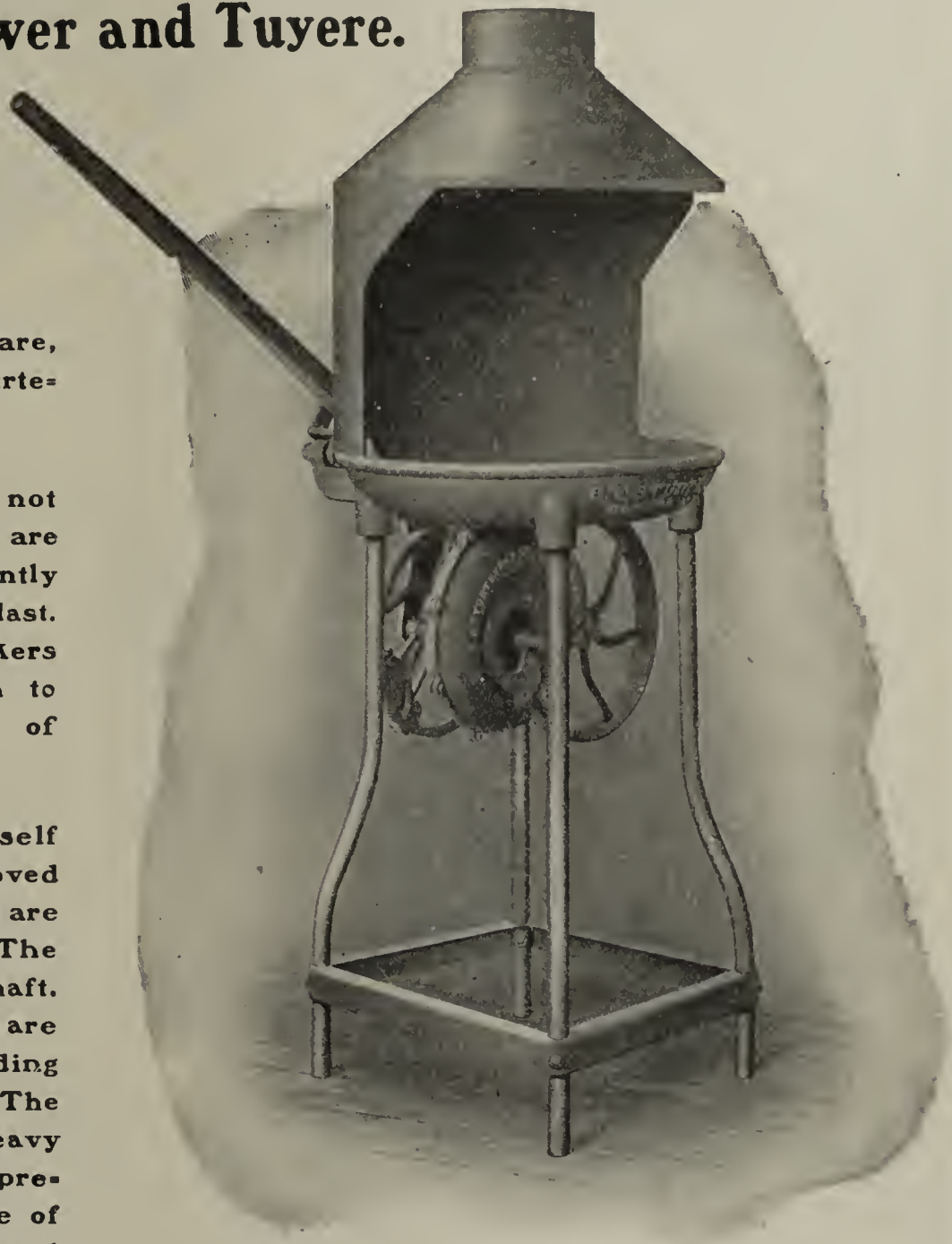
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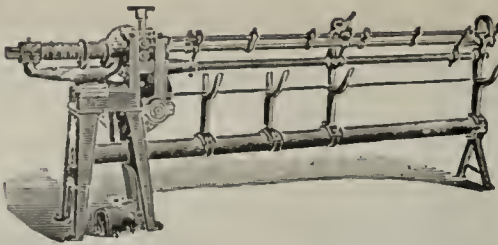
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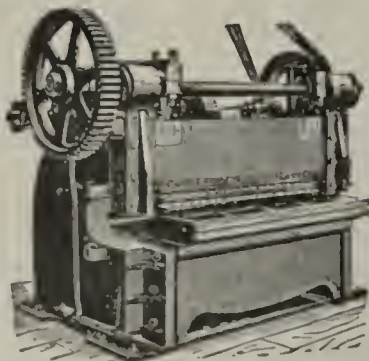
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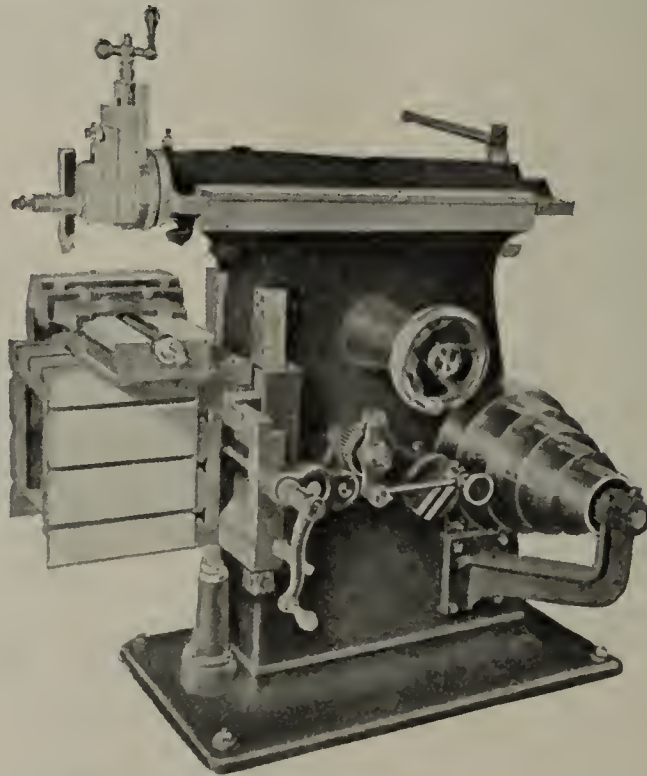
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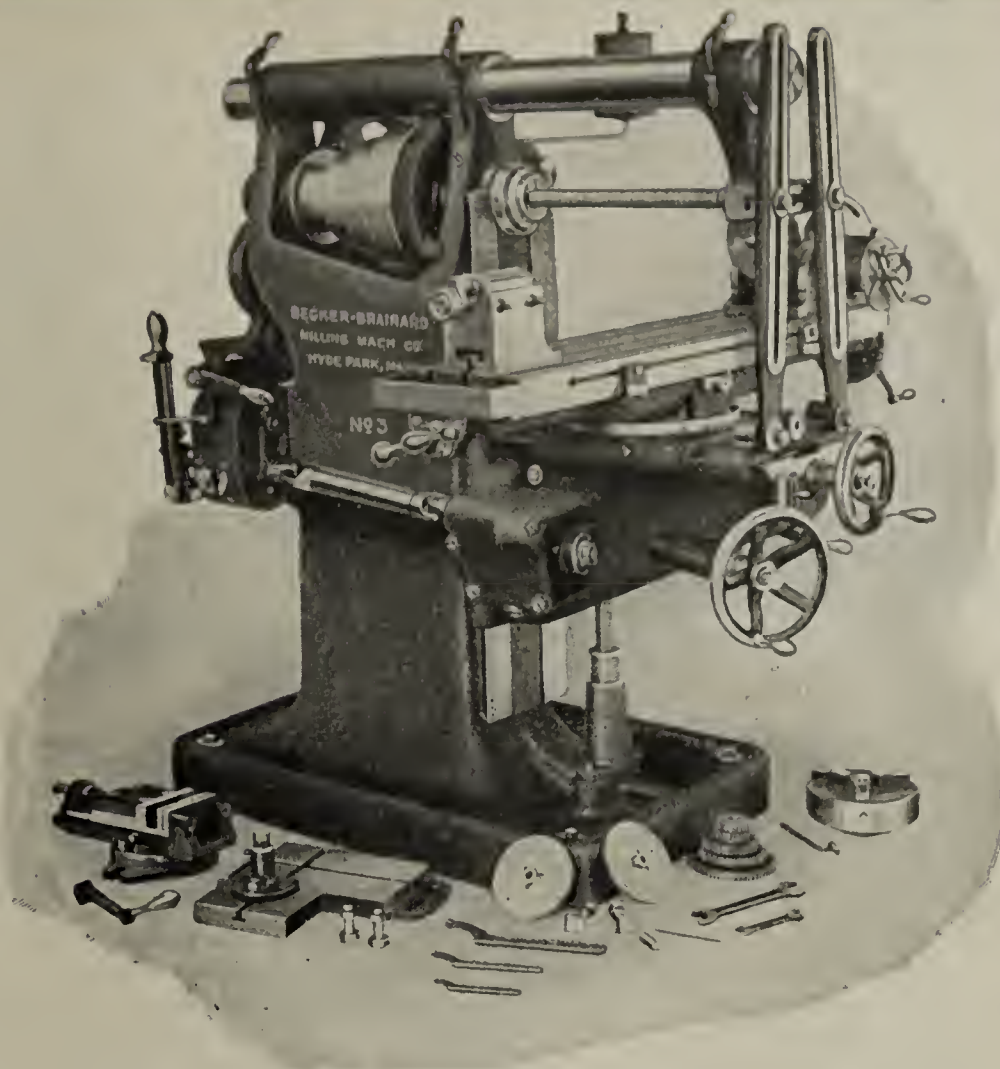
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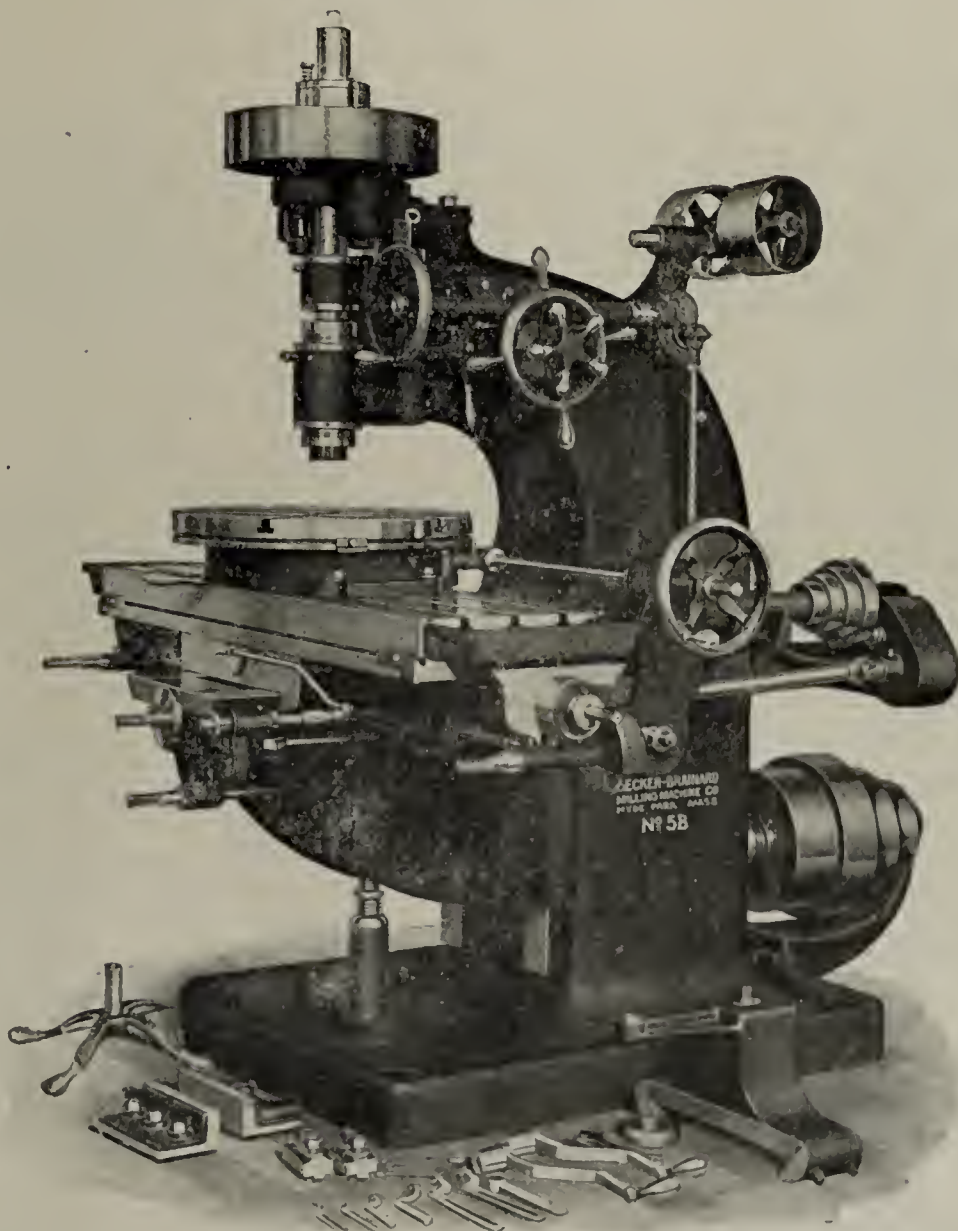
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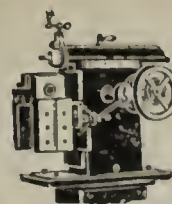
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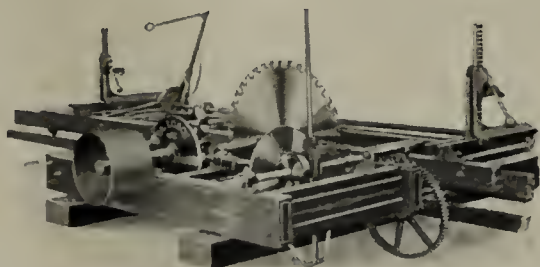
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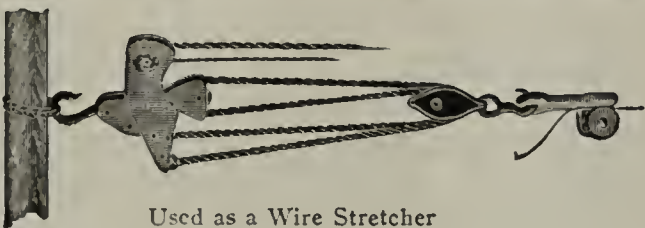
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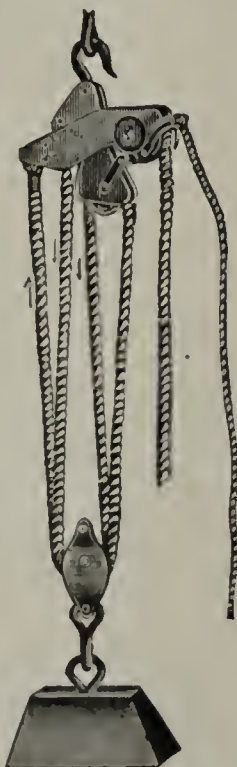
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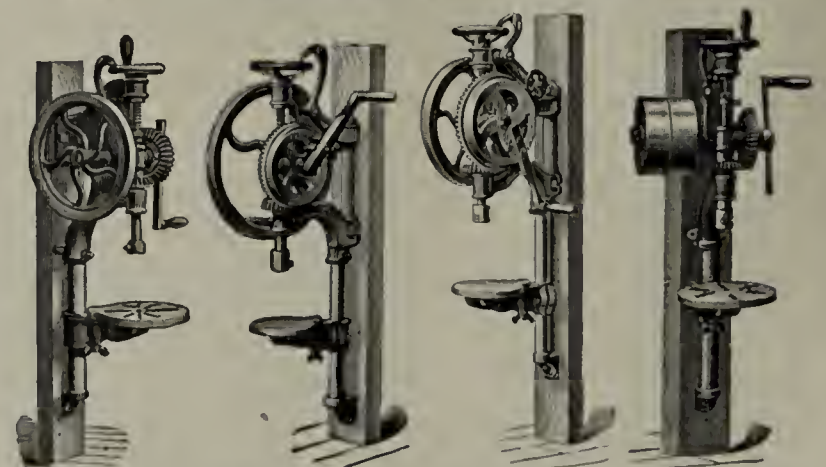


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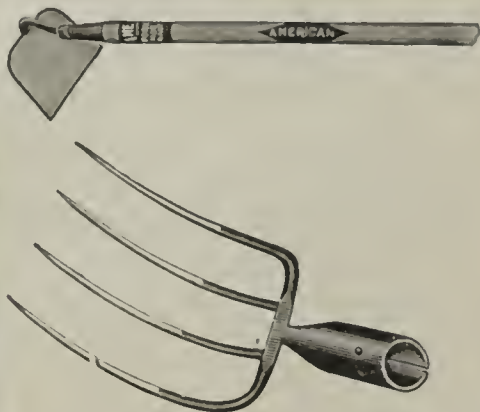
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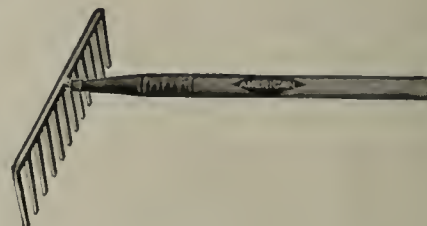
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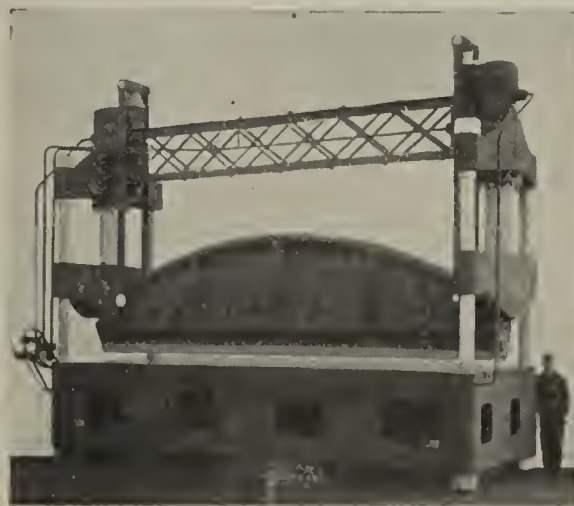
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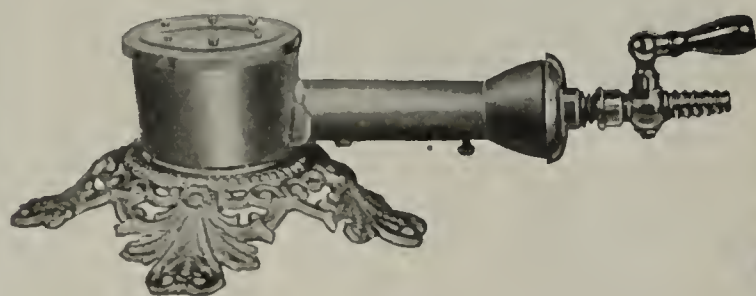
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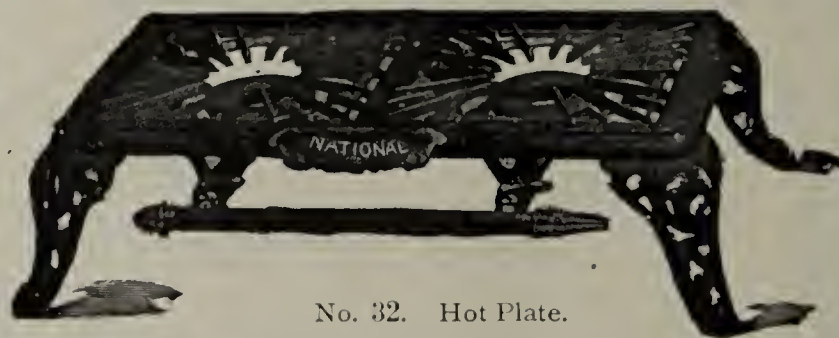


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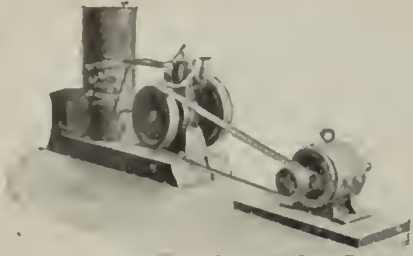
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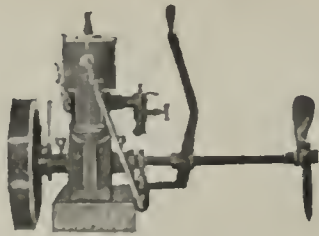
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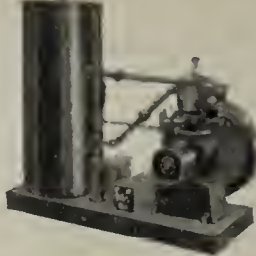
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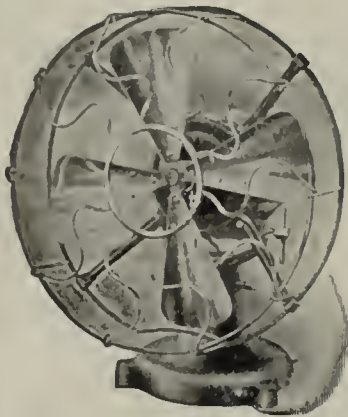
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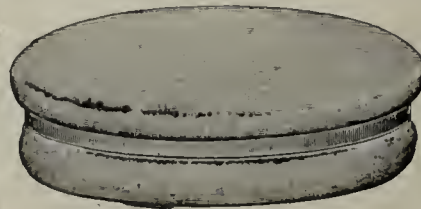


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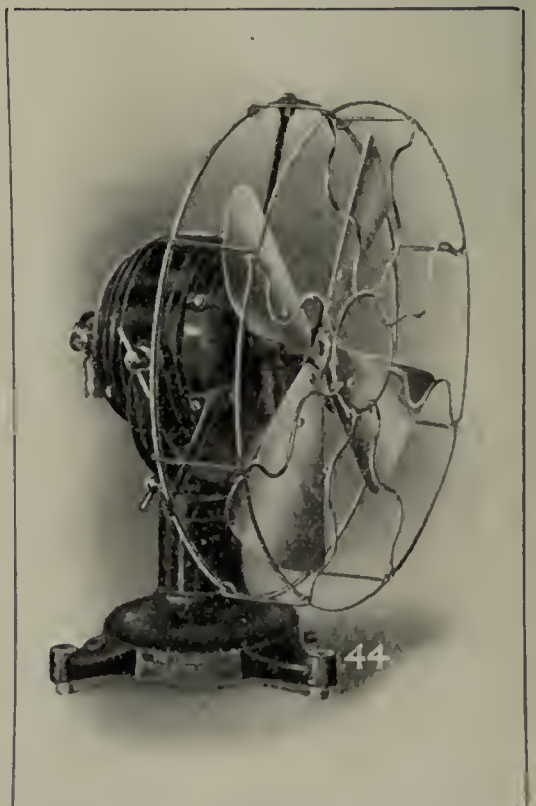
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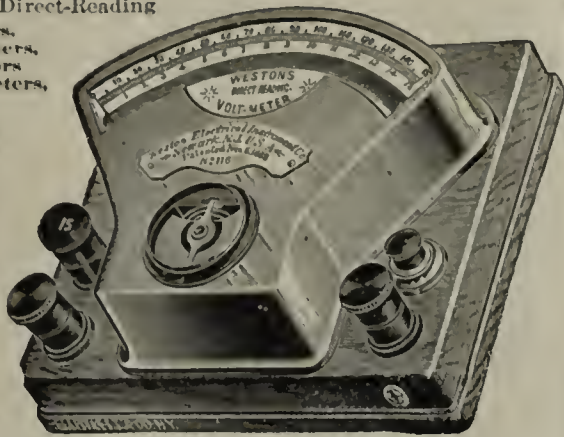
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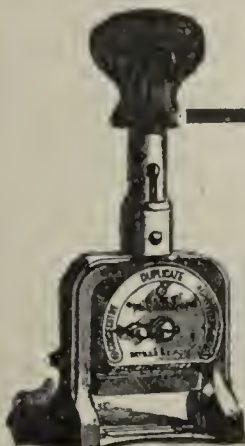
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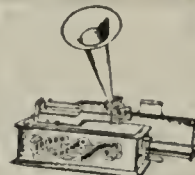
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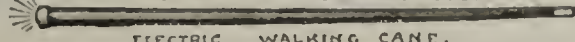
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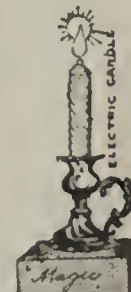
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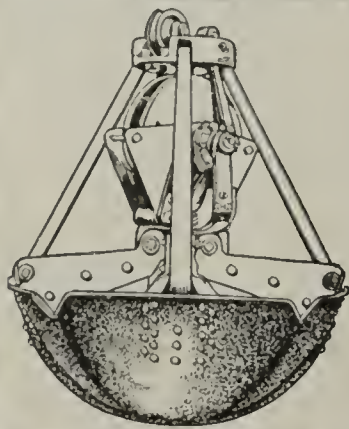
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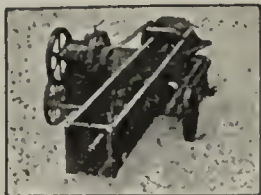
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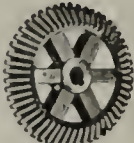
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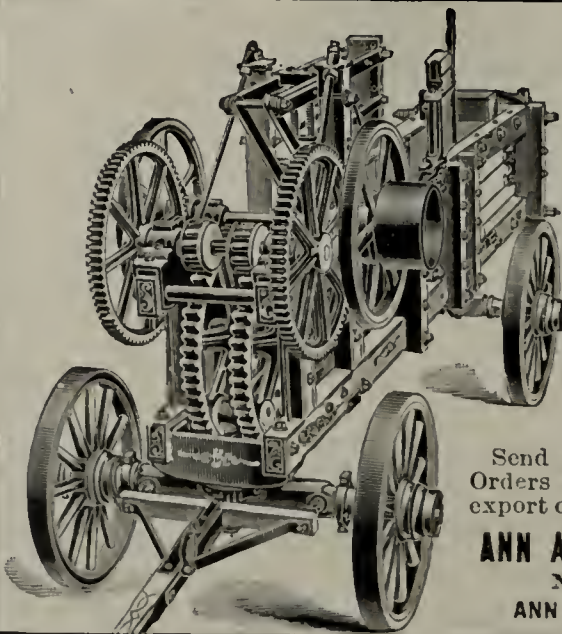
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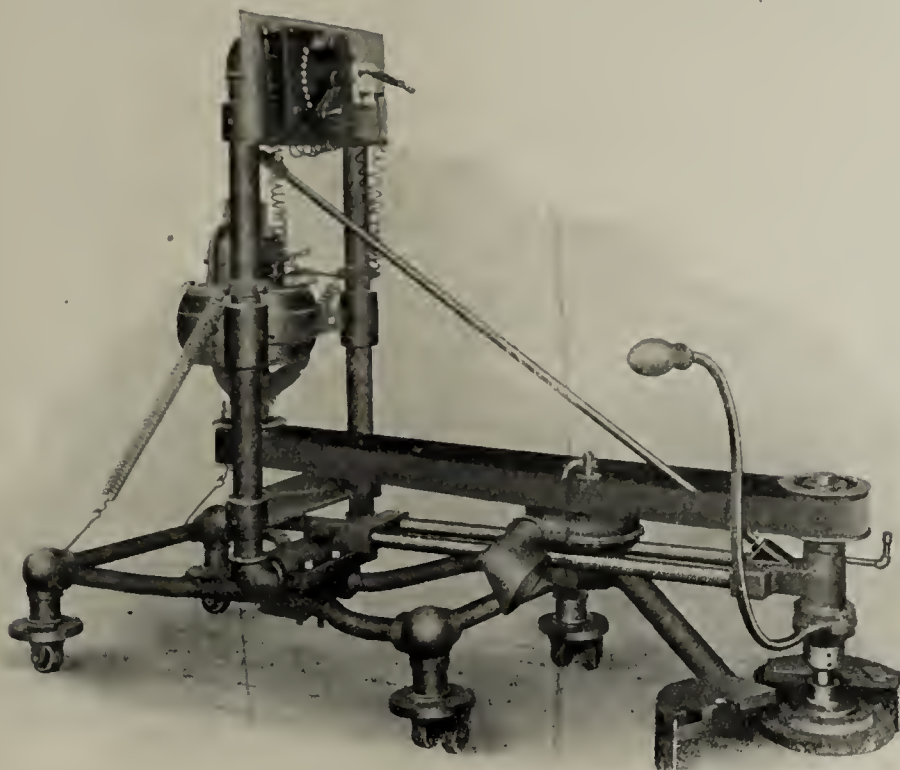
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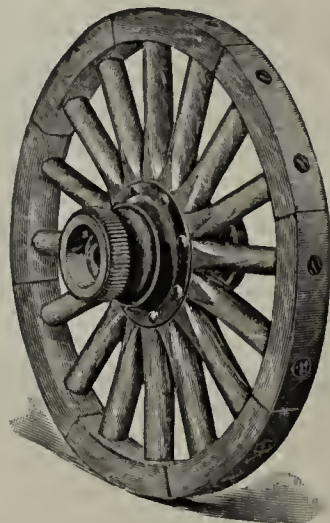
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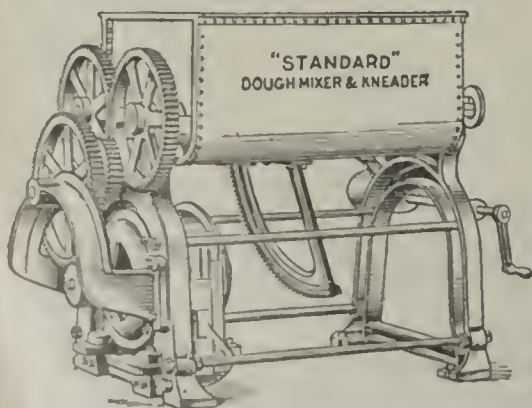
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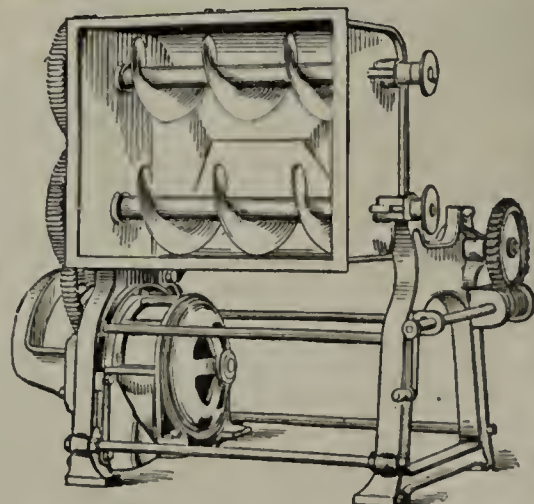
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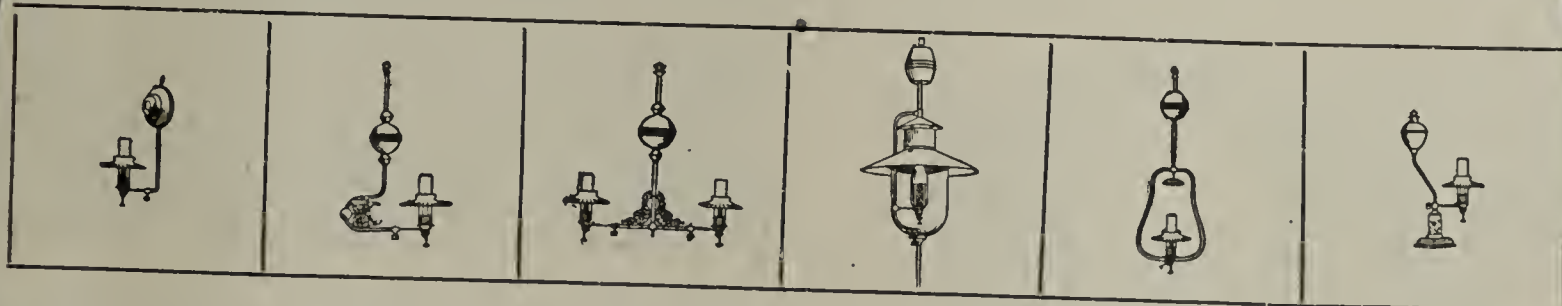
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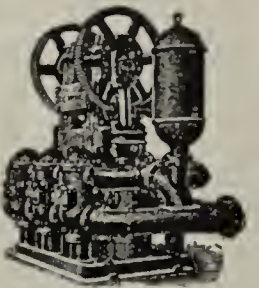
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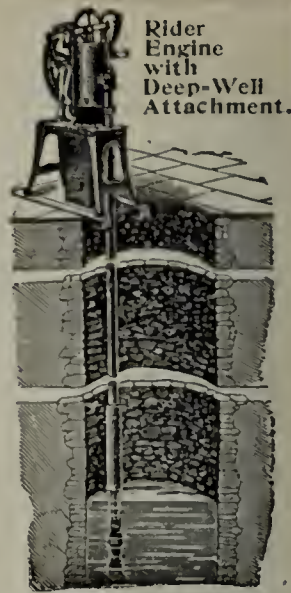
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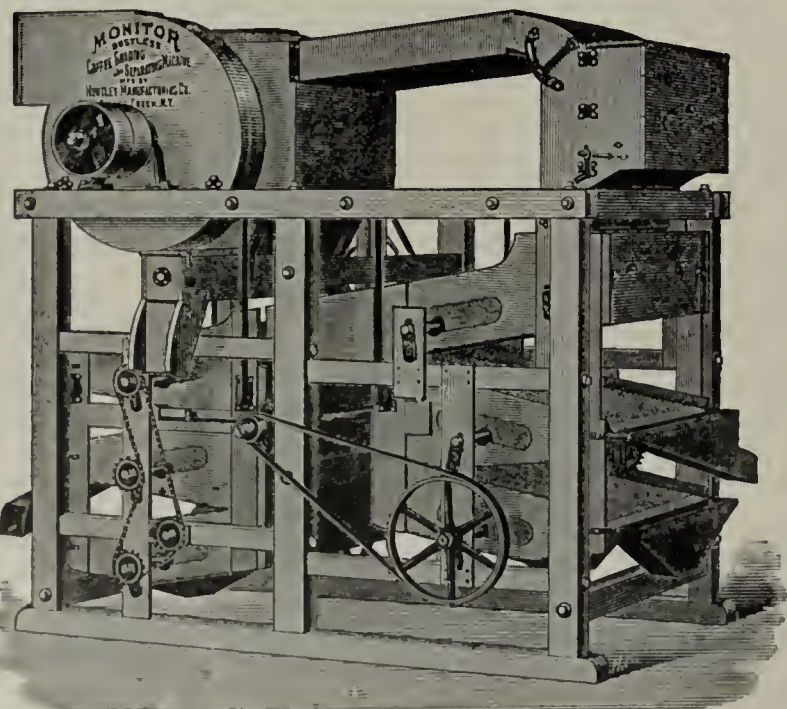
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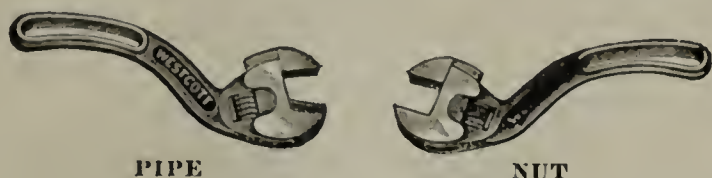
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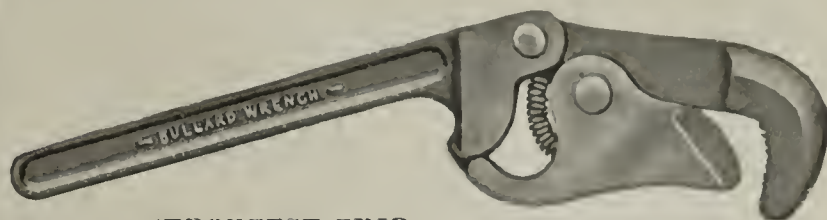


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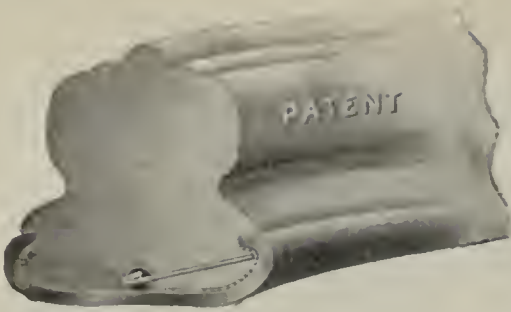
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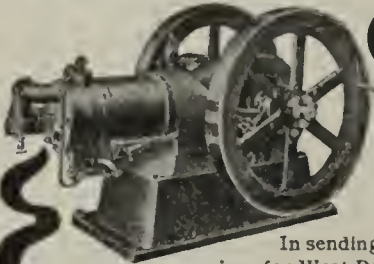
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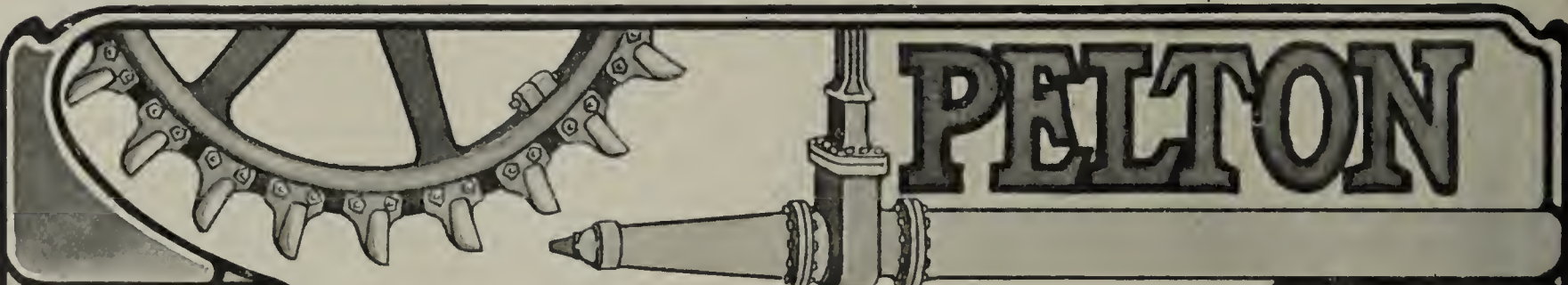
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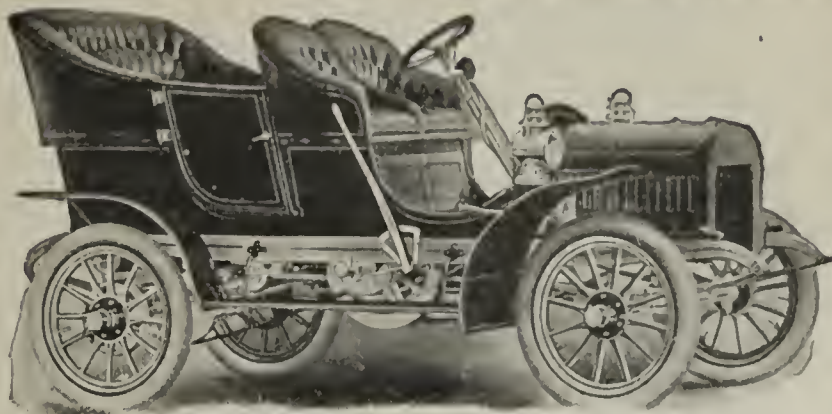
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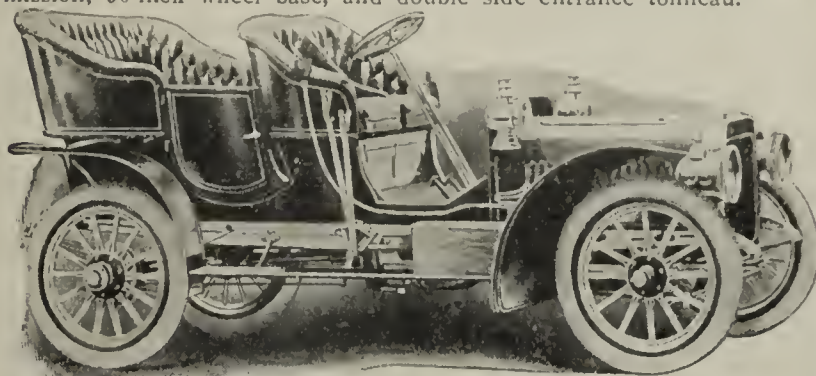
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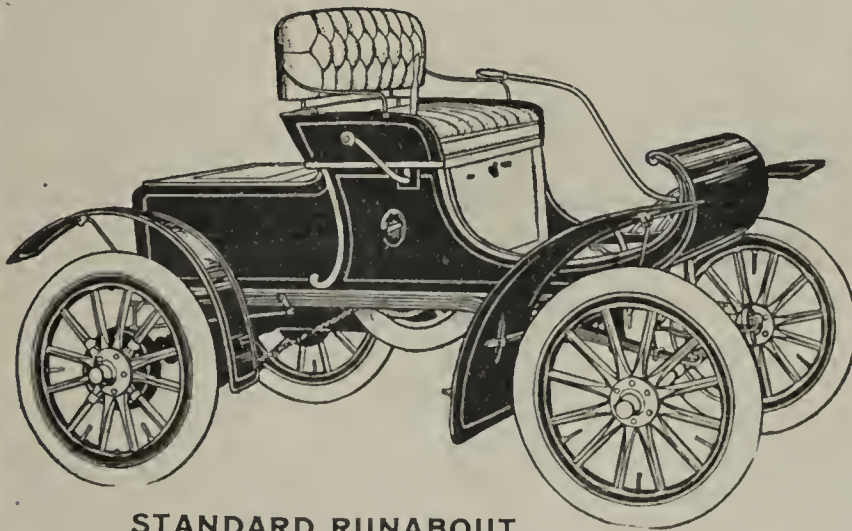
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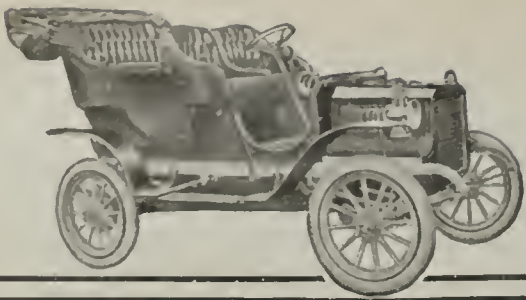


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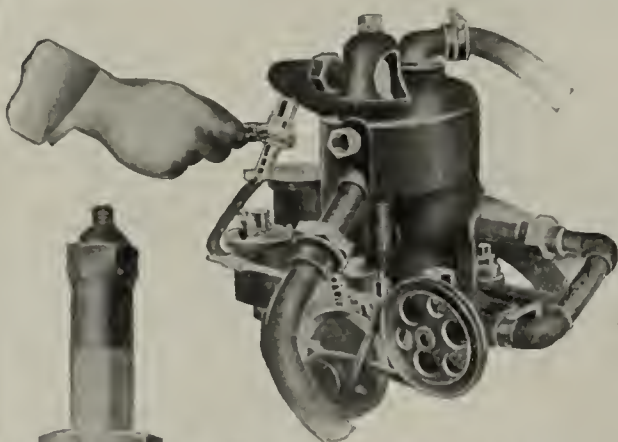
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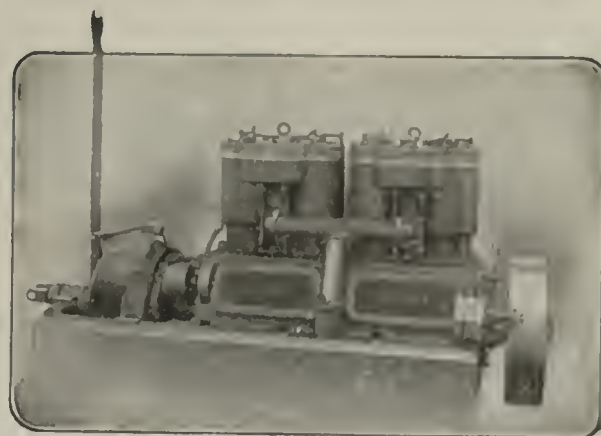
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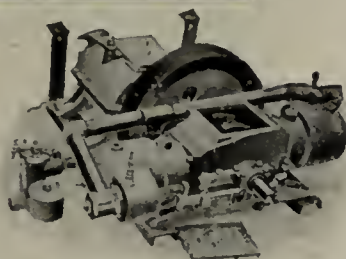
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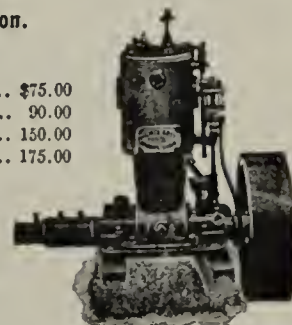
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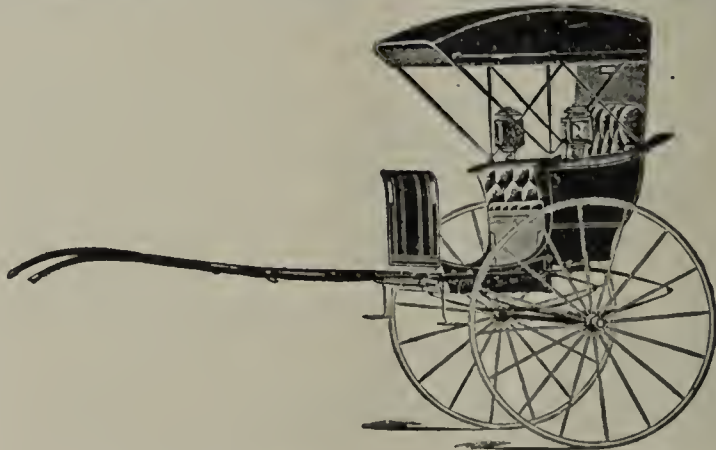
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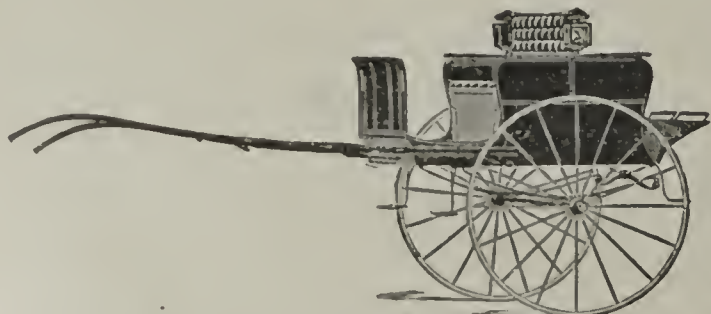
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AMERICAN EXPORTER

ESTABLISHED 1877—CONDUCTED BY EXPORT SPECIALISTS.

With which is incorporated the AMERICAN MAIL AND EXPORT JOURNAL.

Vol. LVI.

NEW YORK, NOVEMBER 1, 1905.

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The AMERICAN EXPORTER is the pioneer and most extensively circulated publication devoted to the upbuilding of a world-wide demand for American manufactures. It is published on the first of each month in English, and on the fifteenth in Spanish ("Exportador Americano").

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The AMERICAN EXPORTER is both an independent and an impartial trade journal. Its publishers have no connection with any manufacturing concern, export commission house, or other business, except publishing, and hence have no outside interest to serve. Its editorial management is separate and distinct from its business management. It treats all its customers alike, and charges the same price for the same service to all.

If, with a larger staff and laid out on broader lines than heretofore, the AMERICAN EXPORTER is more energetic and vigorous than it has been, this does not involve any change in the high aims, thorough independence and conservative management which have for the twenty-eight years of its existence marked its progress and contributed to its influence and stability.

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Another Tour in the Interest of Trade.

Encouraged by the good results obtained by the tour of its publisher to the Orient and of its editor to Europe, the AMERICAN EXPORTER has recently sent its business manager, Mr. Edwin C. Johnston, for a trip through Cuba and Mexico, to assist in still further stimulating commerce between the United States and these countries. The cities visited will include, in Cuba, Havana, Santiago, Matanzas, Sagua la Grande and Cienfuegos; in Mexico, Vera Cruz, Puebla, Mexico City, Guadalajara, Guanajuato, Leon, San Luis Potosi, Zacatecas, Durango, Monterey, Parral and Chihuahua.

Foreign Markets for American Goods.

To-day the AMERICAN EXPORTER celebrates the beginning of its twenty-ninth year. The edition printed is larger than usual, and this issue will circulate not only among importers and dealers in every foreign country where American goods are sold, but also more than ordinarily among manufacturers in the United States interested in extending the sale of their products abroad. In addition to this, the publisher, Mr. W. J. Johnston, has just returned from an extended tour of the Philippines, Japan and China, where, as a member of Secretary of War Taft's party, he studied the opportunities for the sale of American goods in each of these countries. Mr. Henry L. Geissel, one of the editors, has also just returned from visiting for a similar purpose all the principal European cities. Under these circumstances the editors are devoting a number of articles in this issue to subjects of special interest to manufacturers seeking to extend their trade abroad. Mr. Johnston gives his views of the Philippines and of the opportunities which our Asiatic possessions offer for extending the sale of American goods. He also gives the views of several well-known American residents of the islands on the subject. Mr. Geissel treats interestingly and instructively of the different countries of Europe, which offer such a large market for American goods.

The American Exporter—A Retrospect.

By JOHN C. COCHRAN,

FOR A QUARTER OF A CENTURY ITS PUBLISHER.

To the casual observer our export trade is impressive chiefly because of the rapidity of its growth and the vastness of its proportions. He realizes that American manufacturers have become successful competitors in the markets of the world, and, being a patriotic citizen, he rejoices thereat. The story of their resolute advance in the commercial rivalries of civilization appeals to his imagination and he manifests an honest pride in the achievement. As a rule, however, he is but poorly informed as to the agencies through which our export interests have been developed to their present splendid proportions, and is too often

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inclined to believe that the result has come through some special Providence or by accident and without effort or design on the part of American business men.

There could be no greater error than this. It is doubtful, indeed, whether any other great undertaking by the United States in time of peace has required so much thought and care, or so large an expenditure of labor, time and money as has been necessary to place our export trade in the position it occupies to-day.

The task was one of extraordinary difficulty, from which business men less courageous than our own would have shrunk in despair. We had flattered and deluded ourselves with the notion that our home markets were sufficient and would absorb everything that we could possibly manufacture. We had made little or no effort to find markets abroad, and when unsolicited orders for our goods came from foreign sources it too often happened that we insisted upon making, packing and shipping them according to our ideas, instead of consulting the tastes and wishes of those for whom they were intended.

Meanwhile our manufacturers steadily advanced in enterprise, skill and productive capacity, so that when the Centennial Exposition of 1876, in Philadelphia, placed their wares side by side with those of the Old World for the purposes of comparison, it was plain that the United States was prepared to compete successfully in the markets of Europe in many of the most important lines of manufacture.

This exposition, and the searching study of foreign trade conditions which it prompted, gave a tremendous impetus to our export trade. Then began that organized, aggressive movement on the part of our Government and our people which has since won for American manufacturers the deserved and enviable position which they now hold in the world's commerce.

In organizing the campaign by which these splendid results were accomplished it was realized at the outset that one of its prime needs was a suitable journal to represent the interests involved, and at the same time afford manufacturers an efficient and trustworthy medium of communication with foreign buyers.

This need was recognized independently and simultaneously by two leading metropolitan publishing houses of that time whose specialty was trade journalism. In 1877 the AMERICAN EXPORTER was founded by Messrs. Root & Tinker, and the *Mail and Export Journal* by Messrs. Howard Lockwood & Co. After nearly twenty years of keen competition along honorable lines the AMERICAN EXPORTER absorbed the other publication.

At that time the export trade was largely in the hands of commission merchants, many of whom rather resented the appearance of a journal devoted to the higher interests of the export trade, and who therefore did what they could to influence manufacturers and exporters against it, claiming that for them to advertise in such a publication was to bid for direct orders,

Failing in their efforts, a number of these commission agents went into the export publishing field on their own account and established periodicals known in the trade as

"house organs," several of which for a time seemed formidable rivals of the independent papers. Between 1880 and 1890 more than fifty new journals, most of them organs of export houses, appeared, ran their brief careers and dropped out of sight, leaving the AMERICAN EXPORTER to continue its steady march onward and upward.

In view of the present wide range of our exports, which includes nearly every product of the factory, the farm, the mine and the laboratory, it is interesting to note that when this paper was started our export trade in manufactured goods consisted chiefly of agricultural machinery and implements, steam engines and boilers, saw mill and flour mill machinery, well-drilling machinery and pumps, wood-working machinery, sewing machines, edge tools, hardware specialties, clocks, scales and novelties, or "Yankee Notions," of various kinds. In all other lines foreign buyers drew their supplies for the most part from British and Continental manufacturers.

Among the houses which were liberal advertisers in the

AMERICAN EXPORTER in the early days, and which are still carrying announcements in its columns, may be mentioned: Waterous Engine Works Company, J. A. Fay & Egan Company, Stewart Hartshorn Company, Philadelphia Novelty Company, Pelton Water Wheel Company, B. F. Sturtevant Company, Engelberg Huller Company, Wyckoff, Seamans & Benedict, Weston Electrical Instrument Company, Star Drilling Machine Company, Simonds Manufacturing Company, Shultz Belting Company, Samson Cordage Works, New Jersey Paint Works, Kilbourne & Jacobs Manufacturing Company, Huntley Manufacturing Company, R. E. Dietz Company, George V. Cresson Company, W. F. & John Barnes, Kelsey Press Company, Jeffrey Manufacturing Company and James Leffel & Co.



MR. JOHN C. COCHRAN.

The AMERICAN EXPORTER has really changed ownership but once. A few years after it was founded it passed into the hands of the John C. Cochran Company, which corporation was composed of its original owners. At that time the writer, who had always been more actively identified with the publication than had the other members of the company, was made its president and manager, and he continued to direct its affairs until May of the present year, when he retired in favor of its present owner, Mr. William J. Johnston, a gentleman of long experience in trade journalism, whose ability and energy afford the strongest assurances that under his management the interests represented by the publication will be capably and loyally served.

The AMERICAN EXPORTER has been more prominently identified than any other journal with the active agencies that have so largely helped to bring the export trade of our country to its present magnificent proportions. It is now better prepared than ever to render effective service in any undertaking that has for its object the expansion of the export demand for our manufactures. Its motto is still, as it always has been, "Expand the market and increase production."



MEMBERS OF THE TAFT PARTY PARTICULARLY INTERESTED IN FOREIGN TRADE.

From left to right: First row, Senator Newlands, Nevada (standing); Senator Patterson, Colorado; Senator Long, Kansas; Representative Foss, Illinois (Chairman Naval Committee); Representative Sereno E. Payne, New York (Chairman Ways and Means Committee); Secretary of War Taft; Representative Grosvenor, Ohio; Representative Hepburn, Iowa; Representative Jones, Virginia; Representative Hill, Connecticut. Second row, Representative Loud, Michigan; Senator Dubois, Idaho; Mr. R. F. Crist, Special Commissioner U. S. Department of Commerce and Labor; Representative Smith, Illinois; Mr. H. P. Burrill (Department of Commerce and Labor); Representative Longworth, Ohio; Representative Otjen, Wisconsin; Representative Gilbert, Indiana; Representative Cooper (Chairman Insular Affairs); Representative Scott, Kansas; Consul Leroy, Durango, Mexico; Representative Curtis, Kansas; Col. Clarence R. Edwards (Chief Bureau of Insular Affairs). Third row, Mr. W. J. Johnston (AMERICAN EXPORTER), New York; Mr. F. W. Frost (*Engineering News*), New York; Congressman McKinley, Illinois; Representative DeArmond, Missouri; Representative Parsons, New York; Mr. Charles Clark (Editor *Hartford Courant*), Connecticut; Hon. Lafe Young, Des Moines *Capitol*, Iowa; Mr. Ather-ton Brownell (*Public Opinion*), New York.

This photograph was made especially for the AMERICAN EXPORTER by Mr. Burr McIntosh, official photographer of the Taft party.

American Opportunities in the Philippines.

By W. J. JOHNSTON.

The tour proper of the Philippine Islands, which lasted practically a month, gave the members of the Taft party—of which I had the honor to be one—a realistic idea not only of the beauty, extent and fertility of our Oriental possessions, but also of the many industries in different localities. It also offered an unusual opportunity to study the situation with regard to the market which the Philippines will offer for American goods as soon as the present tariff shall be removed.

The principal islands were visited, including Luzon, the largest, at several different points, Panay, Negros, Mindanao, Jolo, Cebu and Leyte. As the trip among the islands was made in a Government transport, placed at the service of the party for that purpose, there was no loss of time in failure to make connections or the like. In order to further facilitate the purposes of the tour, the most elaborate preparations had been made months in advance, to gather together, at the different points visited, those persons especially well informed regarding different matters likely to interest the members of the party. At each place the day of arrival was observed as a holiday, that Government officials, business men and others might be free to devote their attention to furnishing information or answering the questions of the visitors. In this manner, and likewise by means of parades, addresses and printed statistics, the party was put in direct touch with the affairs which they had journeyed so many thousands of miles to study.

Some of the legislation at first passed by Congress for these islands was undoubtedly unfortunate, and has seriously retarded the material progress of our possessions in the Far East. This is freely admitted by the different members of the Taft party, and it is intimated that there will be a change in this respect during the coming winter. Thus far the efforts of Americans anxious to develop the resources of the country have been discouraged owing to certain restrictions. It is believed that the personal experiences of Senators and Representatives on this trip will result in the inauguration of a more liberal policy that will have an important bearing on the development of the industries of the islands, and in opening up a demand for American goods.

When I last visited the islands, five and a half years ago, there were stationed there something like 70,000 American soldiers. The business due to the presence of this army, together with the demands of the natives, made times so good with the merchants that they found themselves earning larger profits than they had ever done before. To-day there are but 13,000 white troops in the Philippines, and this withdrawal has naturally had its effect on trade. Importers and dealers are complaining of hard times. Those engaged in the cultivation of sugar, tobacco, and most of the other industries, except hemp, complain also that the prices they receive for their products are entirely too low. It is, however, generally admitted, even by the Congressmen, that the

remedy for these ills is the admission of the products of the Philippines into the United States free of duty.

It is believed that during the coming winter the Congress of the United States will abolish the tariff on sugar and tobacco coming from the Philippines. This will add to the prosperity of the islands without, it is thought, interfering to any extent with the sugar and tobacco industries of the United States. The market for Philippine sugar, for instance, is almost wholly in China and Japan. These countries pay a dollar or so a ton more than can be had for the sugar in the United States, freights and duty considered. With free entry into the United States, the planters of the Philippines would get in China and Japan that much more for their sugar. They would continue to sell



THREE APOSTLES OF FOREIGN TRADE ON THEIR WAY TO THE FAR EAST.

From left to right, Mr. R. F. Crist, of U. S. Department of Commerce and Labor; Mr. H. R. Burrill, of the same department; Mr. W. J. Johnston, publisher AMERICAN EXPORTER. Photo by Burr McIntosh.

it in those countries and ship little to the United States. This condition of affairs would give the planters of the Philippines more money with which to buy modern American machinery. Congress will be apt to think that such machinery should go to the Philippines duty free, not only as a matter of reciprocity, but to develop the resources of the islands. Should it, however, be considered best not to make the change at present, the belief is that duties on American goods will certainly be removed on the expiration of the ten-year agreement with Spain, which will be in about three and a half years.

In that case, it is the general opinion that the islands will be more prosperous than at any previous time in their history, and that they will offer a market for American goods that will gladden the hearts of our manufacturers. Already Philippine dealers who have been importing from Europe see the handwriting on the wall, and are arranging for American agencies. Exporters at home should lose no time in appointing agents, not only in

Manila, but also in Cebu, Iloilo, Jolo and Zamboango. There are in these latter cities important business houses which not only have no connection with Manila establishments, but on account of the high freight rates from Manila, import direct through Hong Kong or Shanghai, instead of through Manila. In the southern islands particularly, I found the importers (most of whom have heretofore been doing their buying in Europe) eager to know more about American goods, and anxious to receive catalogues and price lists. Of course, I called upon all the principal importers. A number of them said they had never before met the representative of American manufacturers or heard an argument as to the superiority of American goods.

After talking with the principal importers of the Philippine Archipelago—British, German, Chinese and Spanish, as well as American—my opinion is, that with the reciprocity which may be enacted during the ensuing winter, and surely not later than 1908, those islands will offer a magnificent market for American goods, a market, by the way, which our manufacturers should begin to cultivate immediately and earnestly. All the conditions are in their favor, and they will have only themselves to blame if they allow other countries to run off with the prize that is rightfully theirs. The AMERICAN EXPORTER can do much to co-operate with them in developing their business in the Philippines, and I need hardly add that whatever it can do in that direction is at their disposal for the asking.

There are some things which the manufacturer must, however, do for himself to secure anything like good results. Everybody there complains bitterly of American packing. In fact it is a by-word and a reproach which I heard everywhere. German goods and British goods come beautifully packed and with the contents intact. Cases coming from America are almost invariably in wretched condition when they arrive, and it is but rarely that the contents are in a satisfactory state. This matter, as much as any other, has stood in the way of the proper expansion of American trade in the Orient. It can be remedied and should be remedied at once. Goods going to the Philippines have to be transshipped so often, that only the stoutest cases with tin lining will stand the knocking about to which they are sure to be subjected.

The customs red tape is annoying, I admit, but until reciprocity is established exporter and importer must put up with it. The easiest way to proceed is to secure from the customs officials at home the detailed instructions regarding packing, enclosures, just how papers are to be made out, and like data, and then to follow the instructions to the letter. If a manufacturer only appreciated how much trouble and expense results to the consignee, when even the slightest oversight occurs, he would, in his own interest, either see that everything was done correctly or turn the matter over to one who would.

The general opinion among the members of the Taft party is that the climate of the Philippines has been much maligned. Ex-soldiers who arrived with the first of the American troops and who have been there ever since—most of them in business and doing well—speak highly of the climate, provided one is temperate in eating and drinking. At Iloilo I met one of the leading merchants, a Britisher, who has lived on the islands for thirty-two years. General Wood and the health authorities say there is nothing in the climate to prevent an American living there permanently without inconvenience, especially if he can

every few years pay a visit to a country where the weather is cool. Such countries can be reached within a reasonable time. It may be that the islands will be developed by Filipinos under the direction of Americans; possibly largely by Americans themselves, when some of the restrictions are removed; in any event they will offer an excellent market for American goods.

It gives me pleasure to add that the customs officials in the Philippines are doing all they can to develop American trade in the islands.

During the preparation of this article I received a letter which admirably illustrates this point. It is from a collector of customs in one of the Southern ports, whom I had met during the trip. Among other things he says in the letter:

"As soon as possible, after your departure, I called a meeting of the merchants of this place and laid before them the advantages of becoming acquainted with American goods. The seed now sown will, undoubtedly, develop good later. The AMERICAN EXPORTER is on file in this Custom House and in the offices of the largest importing and exporting firms here. Trusting that you had a pleasant return trip, I remain, with best wishes."

Mr. W. Morgan Shuster, Collector of Customs of the Philippines, also expressed his willingness to do all in his power to co-operate with the efforts to increase business between the mainland and the islands. The article in this issue by Mr. Shuster is based on one which he had recently prepared for publication in the *Manila Daily Bulletin*, a well managed publication devoted to the commercial interests of the Philippines.

The same may be said of the article by Mr. McCoy.

Importers and dealers were also prompt to do whatever they could to assist in extending the sale of American goods. As a matter of fact the impression I gained on this visit, as on my last, was that all the conditions are favorable for an American invasion of the Orient, and that American manufacturers themselves are largely to blame for the fact that we are not doing more business than we are in Asia.

Mr. Frank L. Strong, the representative in the Philippines of the Niles-Bement-Pond Company, Yale & Towne and a score of other prominent American manufacturers, is a busy man. He, however, took the time and trouble to prepare for the AMERICAN EXPORTER a splendid article based on his own long and active experience on the islands as a machinery dealer. This article immediately follows my own, and I hope will be read by every manufacturer who shall have that privilege.

HEART TO HEART TALK WITH AMERICAN MANUFACTURERS

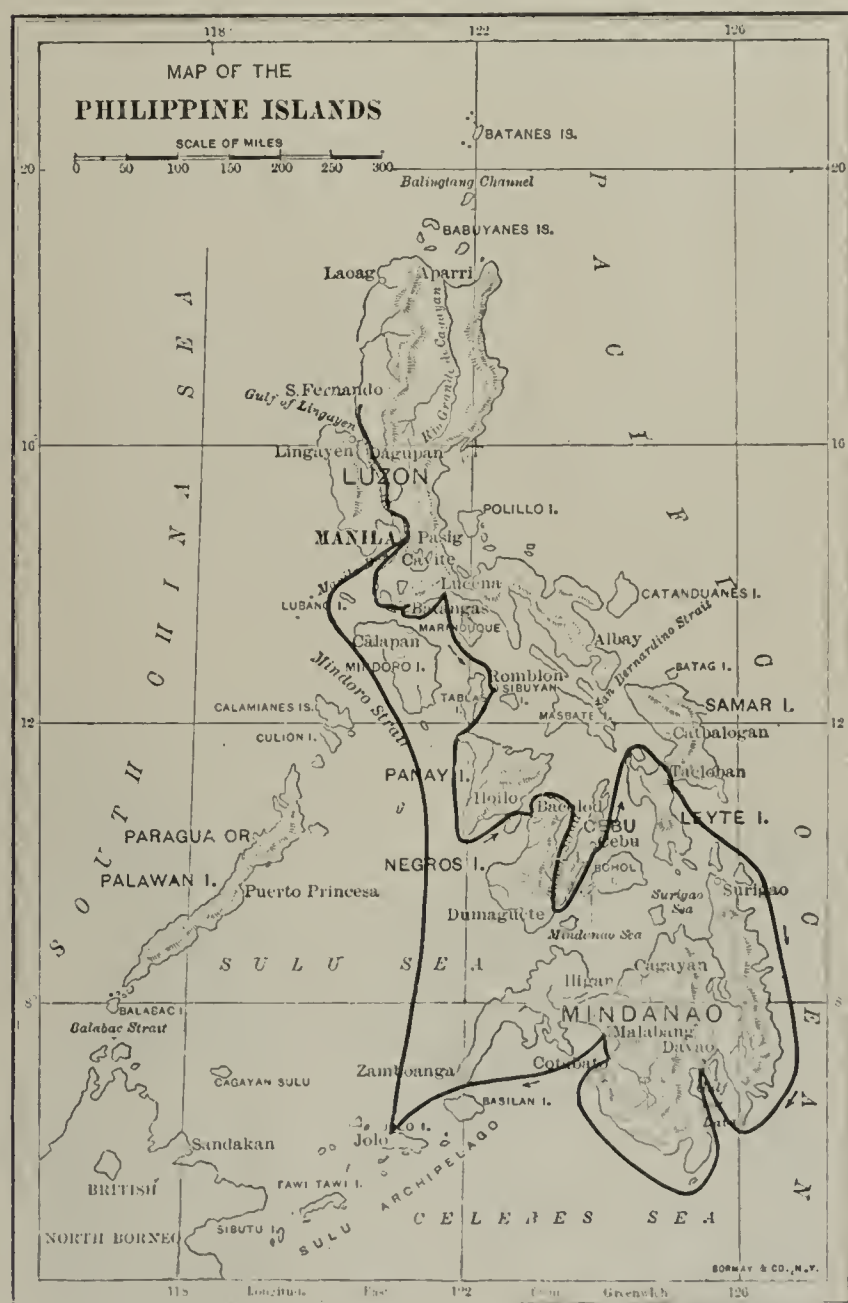
By FRANK L. STRONG, M. E.

To the American engaged in business in the Orient come many surprises, and as time passes these surprises increase and deepen. One thing that particularly astonishes him is the method employed by average American manufacturers in conducting their foreign trade—lack of method, rather. He is forced to ascribe this to lack of knowledge of actual conditions, and perhaps lack of interest. He finds English and German competitors actively engaged in patiently and intelligently studying the wants of Oriental buyers. The representatives of these European houses are supplied with full data and particulars of the goods they sell, enabling them to close contracts without the

delay of submitting the details to the home office. The orders they send in, moreover, are promptly and accurately filled with carefully packed goods, while the shipping documents are exactly as required in the various custom houses.

In a few instances he finds American houses easily and successfully competing in the Far East. Such houses, as a rule, have their own trained men in the field, and in many cases the respective managers of their foreign departments have personally spent years in Asia. Even with this experience, such managers recognize that conditions are constantly changing, and when suggestions are offered they have ears to hear. They have no iron bedstead on which short customers are stretched to fit and the long ones trimmed down, and while alert to impress upon consumers and dealers the superiority of their goods, made according to their own ideas, they recognize that there is a point where missionary work should cease, and such goods be furnished as the trade demands.

These successful exporters do little to encourage other manufacturers to enter the foreign field, and even less to instruct their would-be competitors how to handle export trade. Wise in their



SHOWING THE ROUTE OF THE TAFT PARTY.

generation, they "saw wood and say nothing." They have too good a thing to give away. Early in their experience they found the requisites of success to be: to conduct their foreign department entirely separate from their domestic trade; to put good men in the field and to listen to their suggestions; to see that neither increase in home demand nor anything else is permitted

to interfere with promptness in filling foreign orders; to furnish goods strictly up to standard; to pack them with painstaking care, and finally to follow every detail of customs requirements.

Why do we find so much apathy on the part of many American manufacturers in the matter of pushing for their share of foreign trade? Some will not even consider the great and growing markets abroad, and the majority of those who do undertake to cultivate them approach the problem in a half-hearted way.

Doubtless the extraordinary prosperity of recent years is largely responsible for this condition of affairs. Factories have been doubled and trebled in the effort to fill home orders which have come almost unsought; why, therefore, seek foreign fields? Unless history is never to repeat itself, there will come a day of depression, a day in which the greatly enlarged works will be run on half or quarter time, with the "dead load" expenses abnormally high. A good line of foreign orders at such a time would be a blessing—orders for which cash would be received when the goods were placed on board ship in New York.

Plenty of time to look up that outside business when the trouble comes? Try it and see. Death-bed repentance is said to be of a mighty poor quality, as the sinner is apt about that time to be a busy man in other directions. It takes years to build up a successful foreign trade, and your competitors are busy to-day in stacking the cards against you, by getting their goods into the market through experienced men, who not only know their goods



TRANSPORTATION IN THE PHILIPPINES.



ESCOLTA, MANILA.

thoroughly, but their customers personally, their ways and their language.

Something like five years ago the same postage rates were made between the United States and the Philippines as in the

States themselves.* Thousands of letters, however, are sent from home under foreign postage—five cents for half an ounce, when two cents for a whole ounce is the rate. They come from some of the largest business houses, too. They have been doing this constantly for five straight years, and some of them will continue to do it, because they will not take the trouble to look at the rates, which many of them have right in their own offices.

Several years ago I met an Englishman who is recognized the world over as an authority on international commerce. He had been sent out by the combined British Boards of Trade to study trade conditions in China, and did it thoroughly. On the run between Shanghai and Japan he grew friendly. One day he said: "The Pacific is the ocean of the future, and that ocean naturally belongs to you Americans. You are fools if you do not take your heritage." Yet the bulk of the import trade in China, in Japan, and even in the Philippines, is done by the English and the Germans.

A word with you gentlemen who are already exporting to the Far East. For years you have read accounts of the ill-treatment of Chinese entering United States ports. It was none of your affair if our consuls in China failed to make out their papers correctly for those entitled to land, or fraudulently for those who were not. Neither did you care a rap how the customs officials treated the exempt class, even those whose mission was to buy American goods. Your idea of a Chinaman was, and is, that he is a semi-civilized being with a pigtail who washes for you.

Let me tell you a little story. A Manila business friend returned a few days ago from up the China coast. He ran across an intelligent English-speaking Chinese business man, a graduate of an English university. This Chinese is an extensive user of machinery. Wishing to enlarge his plant, he went to the United States to purchase additional equipment. According to the singular custom of Chinese business men, he took a letter of credit with him with which to pay cash for his machinery. Just the kind of customer you like to see coming into your office, and one who you are apt to introduce at your exclusive club. At the 'Frisco Custom House, however, his papers were found to be "irregular." A husky official seized him by the shoulders, backed him up to a measuring machine, brought the gauge bang down on his head, and recorded his height. Various other parts of his anatomy were measured and recorded, his photograph was taken, and he was cast into a long shed with a lot of filthy coolies whose papers were also "irregular." At the end of three days he was turned loose and told that he could go wherever he pleased in our blessed land of the free.

The Celestial visitor took the first steamer home, and later went to England, and there placed the order that under other circumstances would have been filled in America. As he naïvely remarked in telling his story, "In England he was received with no measuring machine, shed or coolie companions." He added that so long as he lived he would never buy a dollar's worth of goods from the United States if he could avoid it. As the result of the recital of these experiences there are in China many of the same way of thinking. This has injured your trade with a nation numbering 400,000,000, many of whom are the most honorable and upright business men on earth.

The best thing you manufacturers can do in your own inter-

*The United States maintains a post-office at Shanghai, China, and the rate of postage to and from that city is also the same as at home.

ests is to help your brother Americans in the Philippines in obtaining conditions that will sell your goods. Some say that commerce has no conscience, but seeks only the almighty dollar, and we business men are pointed to as a sordid lot of money-making rascals, exploiting new countries solely for gain. We will accept all these compliments with becoming humility, merely remarking in passing that we are the same class of pioneers as changed the Far West from a waste to fertile lands with prosperous cities and villages, and if the bought-and-paid-for politicians and the gabby old women of both sexes will stop shrieking we will do the same in the Philippines.

Putting it modestly, you and we are the world's civilizers. We, of the advance guard, introduce railroads and steamships, machinery and tools, and the tens of thousands of appliances for disseminating knowledge and bettering man's condition. Schools and churches follow where the business man blazes the way. Many of us feel that we have had too little support from the home manufacturers, whose interest it is to have us here. Not a few of you have taken the word of visionaries, theorists and dreamers in preference to ours as to actual conditions. Had you, as a class, stood up unwaveringly in upholding the Government at home and here in its wise policy, you would be selling far more goods in the Philippines to-day.

But do not lose sight of the great question of the hour—American commerce in the Far East as a whole. Center as much thought as you choose on the Philippines; uphold the Government in carrying out the great educational advantages never before in the history of the world extended to a conquered people; give due credit to our clean judiciary, our sanitary revolution, our wonderful public improvements—but have ever before you clearly the vital matter of your commerce in the great and rapidly developing Far East, of which the Philippines form an insignificant part.

Hong Kong stands as a mighty fortified citadel protecting English interests. Germany and France long ago saw the necessity of acquiring each a foothold in the Orient. The Titanic struggle between Russia and Japan for the mastery of the North Pacific coast, and perhaps much more, has been brought to an end through the good offices of the President; and not only Japan, Korea, and Manchuria, but also the great Empire of China will be opened up to American trade even more thoroughly than heretofore. How can you longer remain blind to your own vital interest in the Far East? Many of us who were here during the Spanish war appreciated even then the vast possibilities so clearly that we marvelled at your failing to comprehend and take advantage of the situation.

The Philippines came to us unsought as from the hand of Providence, and you talk of giving them up! Had they been barren islands you should have welcomed them, as giving the

military and naval base essential to your growing commerce in Asia. Pray that you may not some day have to fight for your interests in the Far East, and supplement your prayers by upholding the President's wise policy of so strengthening our navy



CUSTOM HOUSE, MANILA.

that other nations will not attempt to molest your foreign interests.

Instead of barren islands, the Philippines are the garden-spot of the earth. Nature has done everything; man practically nothing. There should be a market for millions upon millions of dollars' worth of your goods here. Most of you have never raised a finger to get this trade, but in spite of you we have made a good start in introducing your goods.

Soon after Americans came they found the Spanish tariff on importations detrimental to their interests, and a committee was appointed to revise it. Although American manufacturers were given the opportunity to co-operate in this work, they apparently ignored the matter, and the result was not what it ought to have been. Now Secretary Taft has brought out to the Philippines a Congressional commission to let them study conditions for themselves. These gentlemen, who have made a splendid impression here, are just going home as I write, and it looks as if, for one thing, they will let our sugar and tobacco into the United States free of duty. This will enable us to devote the profits to purchasing your goods. I hope you manufacturers will talk matters over with these Congressmen and do what you can to bring about legislation in your own and your country's interest, as well as in the interest of the Philippines.

There are plenty more of your shortcomings—more than enough to fill the pages of this issue of the AMERICAN EXPORTER. The field of your sins, principally of omission, is white for the harvest. On the other hand you have many splendid qualities. You make the finest goods on earth; you are sharp, bright and enterprising, and it is a pity you cannot get yourselves into line on this Far Eastern trade. How you can be so bright in some things and so everlastingly dull in others is a mystery to me.

MANILA, Philippine Islands.

American Immigration Figures.—Figures made public at the Department of Commerce show that 1,026,499 immigrants arrived in the United States during the fiscal year ended June 30th last. This is the high-water mark, as the arrivals are in excess of those for 1903, when 857,046 immigrants landed at ports of the United States.



JAPANESE COOPER.

SHIPPING GOODS TO THE PHILIPPINES.

BY W. MORGAN SHUSTER, COLLECTOR OF CUSTOMS FOR THE PHILIPPINES.

All imported merchandise for the Philippine Islands is subject to Customs examination, and nearly all manufactured articles are dutiable.

In order that the assessments and collection of Customs duties, involving as it does the examination of millions of dollars' worth of goods every month, may be performed with dispatch and with a force of employees within the limits of reasonable economy, it is necessary that certain general rules for packing and invoicing merchandise should be prescribed.

These rules are more or less arbitrary, but they are based on what experience has shown will give the maximum of facility, accuracy, safety, economy and dispatch in the examination and assessment of large quantities of miscellaneous merchandise.

Rules for Shippers.

These rules are few and simple. They are easy to follow in preparing the merchandise for shipment, but as a matter of fact they are not followed in a large number of shipments originating in the United States.

As the Customs officers have dealings only with the importer or local merchant, they must hold him responsible for the way his goods are packed. He, in return, must depend on his exporter or shipper for the proper packing and the proper invoices. If a certain country's exporters are either unable or unwilling to meet the requirements of the trade for which they pack, it is inevitable that the local merchant should go to another country for the desired goods, if they can be obtained at the same or anywhere near the same price. The importance of meeting the requirements of any particular export trade is thus plainly apparent.

The requirements of the Philippine Customs service in regard to imported merchandise are, briefly, these:

"The importer must declare in writing the number and marks of packages, or the quantity of the goods (if in bulk), and the nature of the merchandise in the terms of the tariff in force in these Islands.

"He must present an invoice of the goods, setting forth their value, with all costs incidental to placing the same, packed, ready for shipment to these Islands. Invoices must show the values of the several classes of merchandise separately, in order that the importer may properly declare the same. They must be made out in the currency of the exporting country, and must show the marks and numbers of the packages, the gross and net weights of each package, as defined by the Philippine tariff laws.

"Thus, 'gross' weight is the same for tariff purposes as for purely commercial transactions—and no difficulty ever arises on that score.

"'Net' weight within the meaning of the Philippine tariff laws, has, however, a somewhat different significance.

"As is clearly set forth in Rule 18 of the 'Tariff Revision Law of 1905' (New Tariff), the tariff *net* weight of merchandise means the *actual weight of the goods* plus the weight of all *interior* wrappers, packing or receptacles. In other words, it is the 'gross' weight of any case or package *minus* the weight of the *exterior* package, which is the wooden case, barrel, cask or baling itself.

"To illustrate: Common glass bottles are dutiable on 'gross'

weight. A case or cask of these bottles should therefore be accompanied by an invoice showing the weight of the entire case or cask as it stands ready for shipment.

"Perfumery is dutiable on 'net' weight—the *tariff* or *dutiable* net weight, as was explained above, is the weight of the goods *plus* that of all *interior* or *immediate* packing. The invoice of perfumery should, therefore, give the gross weight of each case, and the 'net' weight of its contents, which is the 'gross' weight *minus* the weight of the outside case or box itself.

"Most goods are dutiable under the Philippine tariff either on gross or net weight, a number of them are dutiable *ad valorem*, and a very few are dutiable by unities.

"The tariff shows distinctly just on what basis every article is dutiable. Importers can therefore inform their shippers just how each class of goods should be packed, or shippers can obtain the information by themselves consulting the tariff.

"If an importer has any doubt as to the correct classification of an article, he is entitled to request and obtain from the Collector of Customs a written classification of the article in advance of ordering the same, and the Collector is bound by said classification.

"There is thus little or no legitimate excuse for failure to so pack goods that they will arrive in the Philippines in a safe and whole condition, ready to be promptly entered for duty by the local importer, and so arranged that their examination and appraisal will be accelerated and accomplished with the minimum amount of opening, weighing, handling and repacking. Such is the purpose of the above described rules for tariff and dutiable weights, and as they actually accomplish that object, thereby saving expense to both seller and consumer, as well as to the taxpayers at large, no good reason appears why they should not be followed by all American exporters just as they are by most of the exporters and shippers of Europe."

The scope of this article prohibits any discussion of the underlying causes of this apparent apathy on the part of American shippers, and of their unwillingness to put themselves out to "cater" to their export trade. Enormous home consumption may play a part in the explanation, and inexperience in this particular line may cover the rest.

However, the repeated calls for a change which have been made by the commercial press of the United States, and the experience which seven years of insular territory have given, have operated in the right direction, and while there is still an unlimited field for expansion, the importations of American goods into these Islands continue to increase.

As illustrative of the difficulties under which local importers often labor, a case may be cited in which six glass percolators were ordered by a local druggist of an American supply house. They arrived in due course packed in a wooden case, without a pound of excelsior or any other interior protection. The importer naturally took them away in a bucket.

In another instance, a manufacturing house in America shipped a small consignment to Manila and forwarded a United States local railroad bill, for the use of the importer here in getting his merchandise from the steamer.

The local druggist in question stated that he contemplated ordering a large consignment of drugs and other supplies, but that against his preference he would be compelled to obtain them in Germany, where they would be packed, invoiced and billed in a

businesslike way. It is beyond credence that a country which progressed as has the United States in the art of manufacturing can continue long to lose the legitimate benefits of its skill through inattention to apparently trifling but in reality very important details of any export trade.

It is our firm belief that if these matters are brought squarely before American exporters they will promptly appreciate and remedy the faults here referred to.

SHIPPING OF THE PHILIPPINE ISLANDS.

BY H. B. MCCOY, DEPUTY COLLECTOR OF CUSTOMS OF PHILIPPINE ISLANDS.

During the year 1904 the port of Manila was visited by 556 vessels, having a net registered tonnage of 1,005,488 tons,

at all three of these ports it is building docks and piers and providing improved facilities for the loading and discharge of both foreign and coastwise ships.

THE BUSINESS AND COMMERCE OF JAPAN.

BY HENRY B. MILLER, AMERICAN CONSUL-GENERAL, YOKOHAMA.*

The foreign trade of the Japanese Empire, both in imports and in exports, is making wonderfully rapid strides—in fact it has more than trebled in volume within ten years. During the six months ending June 30, 1905, its volume of business was larger than that of any previous period of similar length in the history of the country. Notwithstanding the war, then going on, the exports, as well as the imports, showed a decided increase, and it seems quite clear that the war, now happily over, actually



CHARACTERISTIC VIEW OF THE CITY OF TOKIO.

bringing freight aggregating 624,092 tons, valued at \$25,849,-208 gold. Of this import tonnage 75,062 tons, valued at \$4,916,543, were from the United States. Of these vessels 82, with a registered tonnage of 254,407 tons, were of American registry, arriving from the United States. Of the import tonnage brought to Manila, merchandise to the value of \$2,326,420, or less than 50 per cent. of the importations from the United States, arrived in American vessels, and merchandise to the value of \$301,420 (a trifle over 1 per cent. of the total) was carried in vessels of the Philippine Islands and consisted mainly of rice cargoes imported from Saigon.

The export trade of the islands shows practically the same conditions and proportions. During the year there were exported from the port of Manila 162,404 tons of merchandise, valued at \$22,562,402 gold. Of this 49,554 tons, valued at \$8,813,742, went to the United States. Of the total exports only \$2,011,002 was carried in American bottoms, and none in vessels of the Philippine Islands.

The Government is spending immense sums of money in the improvement of the ports at Manila, Iloilo and Cebú, and

stimulated business, and has resulted in a substantial development of Japanese industries.

The following figures covering respectively the six months ending June 30, 1900, 1904 and 1905 tell the story at a glance:

Six Months Ending June 30.	Exports, Yen.	Imports, Yen.	Total Yen.	Equivalent in U. S. Gold Dollars.
1900	95,053,057	163,435,615	258,488,672	128,727,370
1904	137,465,703	182,631,872	320,100,575	159,410,086
1905	142,767,953	286,462,862	429,230,815	213,757,066

During the six months referred to the exports to the United States were greater than ever before for a like period, while the imports from the United States were more than double. In imports from the United States there was a notable increase in the following articles:

Raw cotton reached the large amount in value of \$11,774,464 gold, being more than double that of any similar period since 1900.

Machinery and engines reached the unprecedented value of

* This article is based on some interesting facts and notes prepared by Consul-General Miller for presentation to the members of Secretary Taft's party, September, 1905.

\$3,262,231; locomotive engines, \$387,032; iron bar and rod showed a most satisfactory increase to \$155,873; iron rails to \$187,484; nails to \$265,981; iron pipes and tubes to \$174,948; iron and steel to \$646,017. This is the greatest amount of iron and steel ever shipped from the United States to Japan for a like period, and shows a splendid growth in that line.

Leather imports from the United States reached the enormous value of \$3,223,219. Flour also reached its greatest volume in value, \$2,806,620.

The enormous imports of flour and leather were due to the war demands, without doubt, and the increase in iron, steel, engines, machinery, etc., was also caused by the war requirements. It is clear, however, that in all these lines and many more there is a strong growing demand for the products which the United States is in a position to supply.

GROWTH OF JAPAN'S EXPORTS AND IMPORTS.

	Exports.	Imports.	Total.
1868	Yen 15,553,473	Yen 10,693,072	Yen 26,246,545
1894	113,246,086	117,481,955	230,728,041
1904	319,260,896	371,360,739	690,621,635

TRADE WITH THE UNITED STATES.

	Exports To.	Imports From.	Total.
1894	Yen 43,323,557	Yen 10,928,558	Yen 54,252,115
1904	101,250,775	58,116,344	159,367,117

Roughly speaking, the value of the yen is 50 cents, American gold, or to be exact \$0.498.

From the above it will be observed that the exports to the United States are two and a third times and the imports from the United States five and a third what they were ten years ago. About one-fourth of Japan's entire foreign trade is done with the United States.

1904.

JAPAN'S TRADE WITH VARIOUS COUNTRIES.

	Exports, Yen.	Imports, Yen.	Total.
United States.....	101,250,773	58,116,344	159,367,117
China and Hong Kong..	96,145,976	57,305,746	153,451,722
Great Britain.....	17,643,963	74,992,865	92,636,828
British India.....	9,404,954	68,011,997	77,416,951
Korea	20,389,778	6,400,777	26,790,505
Germany	4,104,122	28,697,382	32,801,504
France	36,320,102	334,323	39,654,425
Belgium	310,887	6,104,474	6,415,361
Philippines	1,674,447	2,468,707	4,144,554

The great markets for the products of Japan, in point of consumption of Japanese goods, are the United States, China and Korea. Japan could not afford to have her position in Korea and China dominated by any foreign power. This constitutes an economic foundation at least for explaining the motive in the recent war. Her export trade to China had grown from yen 582,-585 in 1891 to yen 67,985,873 in 1904, and her imports from yen 8,798,428 in 1891 to yen 54,810,336 in 1904, and her exports to Korea from yen 1,466,040 to yen 20,389,723 in the same period.

Any one familiar with the expansive market possibilities for the products of Japan in China and Korea and her present growth in lines of manufacturing, as well as the fields from which she is to draw much of her raw materials and food products, together with her possibilities and enlargement of her merchant marine, can clearly discern that the future welfare of Japan—in fact her very existence as a nation—is dependent on the free play of all her industrial and commercial energy in

this territory, unhampered by the dictation of any foreign power. Under this freedom she will, within ten years, astonish the world as much in the development of her manufactures and commerce as she has surprised it in the last ten years by her expansions of military and naval powers. Whatever this may signify to the world in general, and to America ultimately, I am not able to prophesy, but for the next twenty years and more it indicates a great increase in our Oriental trade. It will most likely bring many changes, and in some lines it may spell disaster, but on the whole we cannot fail to be benefited by the internal development of China, Korea and Japan.

Improvement in the standard of wages and type of life of these hundreds of millions of people will call for more and more of the products of the United States, and provide a market for thousands of things not now consumed, and our expansion of trade will be as marked in its variety as in its volume.

There has been a large increase of population in Japan proper each year since 1872, when it was 33,110,793, until in 1905 it reached a total of 47,812,702. For the past eight years the annual increase has been about 600,000.

MR. STRONG'S VIEWS ON ORIENTAL TRADE.

In his heart-to-heart talk with American manufacturers, printed elsewhere, Frank L. Strong, M. E., handles his subject in an open and straightforward manner, characteristic



MR. FRANK L. STRONG.

of the bluff old sea dog that he is. Mr. Strong served his country in both the Civil and Spanish wars. He was with Dewey in the Far East. Leaving the service at the close of the latter incident, he returned home and was retained by the Quartermaster General of the army as consulting engineer in the work of drawing plans and specifications for the Government cold storage plant at Manila, and to act as superin-

tendent of construction of that magnificent structure. Upon the completion of that work he decided to remain in the Philippines. His knowledge of the existing conditions, his familiarity with machinery and the purchase of apparatus and supplies enabled him to readily connect himself with a number of the leading houses of the United States. He still retains some of his consulting work, but his principal business is the handling of machinery and tools.

Mr. Strong is one of the foremost American citizens in the Philippines, and a man of keen observation and vast experience. What he says about the situation in the East may be regarded as authoritative and authentic.



VIEW OF THE CITY OF MILAN.

OUR TRADE WITH THE CONTINENT OF EUROPE.

BY HENRY L. GEISSEL.



FOR the third time in five years the writer has made an extensive tour of the European Continent, closely studying the market conditions and opportunities for the extension of American trade. In making the tour he traversed the length and breadth of the Continent several times, investigating the commercial and industrial situation thoroughly, not only in each of the countries, but in every important industrial district of interest to the merchant or manufacturer of the United States. Personal calls were made on all the leading importers of American goods of every variety. Interviews were had with a large number of the officers of the United States diplomatic and consular service, and visits were paid to important foreign commercial bodies, such as chambers of commerce, import and export unions, and similar trade organizations of international character.

Everywhere there is a welcome for American products. Europe has always been our best customer and in all probability always will be. There is evidence of universal good-will toward the people of this country, and unstinted admiration and praise of the rapid industrial strides made by our manufacturers, which are regarded as marvelous in view of the fact that this nation has not yet concluded commercial treaties with some of the leading countries of Europe. It is important that steps in this direction should be taken at the earliest possible moment, in order that the friendly ties already existing should be made more binding.

To Stimulate Business.

The Parcels Post convention has resulted in a wonderful impetus to international business, and has been the means of bringing new trade to American manufacturers and exporters. It is extremely advisable, in my opinion, that arrangements should be made without delay for the extension of these facilities, in order that there should be an increased exchange of commodities between the United States and the countries of the Old World.

Another matter which has been frequently referred to before, here and elsewhere, but which cannot be too forcibly called to the attention of the American merchant and manufacturer, is the futility of sending to non-English speaking countries catalogues

and other literary matter printed in English. I have seen stacks of such matter, elaborately prepared, printed at a great cost and mailed at a considerable expenditure for postage, tossed into a corner until such time as might be convenient for the porter to remove it.

Another matter of almost equal importance is to see that the proper postage is put on mail matter sent abroad. In all cases of insufficient postage, the penalty which the addressee is called upon to pay is double and sometimes even treble the amount of the shortage, so that the postage bill for a few packages of inadequately stamped mail matter often amounts to a large sum. This frequently results in the refusal of the package, and when the amount is paid it is always done with reluctance. This is an imposition which should not be forced on a prospective patron. Such an incident will often have a serious influence and be the means of diverting an order into another direction.

On the whole, the prospects for American manufacturers doing an unprecedentedly large business with European countries were never brighter than they are at present, but this golden opportunity will be lost unless the trade is cultivated in a systematic, energetic and intelligent manner.

The Needs of the Azores.

On the way from New York to Gibraltar we pass the Azores, islands which are beautifully situated in the Atlantic Ocean and famous for their fertile soil and wonderful climate. The Archipelago belongs to Portugal and consists of nine islands, of an aggregate area of 920 square miles. The population is about 270,000. The largest island is St. Michaels, with Ponta Delgada as the chief port. Other important towns in the Azores are Angra do Heroismo, Horta on the island of Fayal, and Santa Cruz on the island of Flores. The principal imports include cotton goods, hardware, iron and steel, small tools, light agricultural implements, lumber, soap, petroleum, paints and varnishes, glass and earthenware.

Up to the present time the islands have chiefly been supplied by Great Britain and the mother country, Portugal, though it may be assumed that the great bulk of goods com-

ing from Lisbon is principally of German origin. There are many established firms in the Azores, and it is more than probable that in some lines at least American houses would be able to secure a share of the trade. The following articles especially should find a sale: Single and double plows, corn planters and shellers, seed planters, horse rakes,



HOW CORN IS DRIED IN THE AZORES.

hay-making machines and implements, garden tools, corn-mills, grinders and crushers, turnip and mangold cutters, improved butter-making apparatus and other dairy accessories, milk separators, donkey engines, wheelwrights', blacksmiths' and carpenters' tools, clod-cutters and scythes.

What Gibraltar Buys.

The writer's first stop on the Continent was at Gibraltar. It is generally believed that the commercial language of Gibraltar is English, but this is not the case. Spanish is used universally, and a number of business men on the "Rock" even do not understand English, in spite of the fact that the fortress is populated by nearly 7,000 "Tommy Atkinses."



HARVEST IN THE AZORES.

Gibraltar is a good market for all kinds of preserves, canned vegetables and fruits, chocolate, bacon, ham and lard. The city also offers an excellent market for flour, which hitherto has generally been imported from France. I was told by several importers that the French flour is of an inferior quality, and frequently mixed with potato flour.

It is to be regretted that American manufacturers have paid little attention to the demands of Gibraltar. There is no doubt that considerable quantities of general hardware, including all kinds of domestic machinery, kitchen utensils, etc., small tools, musical instruments, optical goods, photographers' supplies, including cameras and films, perfumery and toilet articles, plated ware, watches, alarm clocks, iron and brass bedsteads, gas stoves, burners, gas supplies, light fixtures and many other articles could be sold if properly brought to the attention of the merchants of Gibraltar. Gibraltar also offers a good market for timber, including teak, oak, elm, ash and pitch pine.

Opportunities in Spain and Portugal.

Splendid prospects for an increased sale of American goods exist throughout Spain and Portugal. These two countries are making slow but steady progress. Three years ago I crossed Spain from south to north and east to west. On my recent visit I was astonished to see the progress made in many ways. Little towns and villages, in which, up to a few years ago, the only light was cheap candles and lanterns, are now illuminated by electricity. The railroads of the two countries are being extended and new roads are being built. In the south of Spain,



GIBRALTAR AND LA LINEA.

especially in Andalusia, railroad improvements are badly needed. I traveled on a train from Seville to Huelva—on my way to the famous copper mines of Rio Tinto—which was pulled by an engine built fifty-two years ago, and the cars from which I had the doubtful pleasure of viewing the scenery had been sold by a Swiss railroad company eighteen years ago as "unfit for further service." However, the Government has set aside a considerable amount of money for the construction of new lines, and I have been assured by prominent railroad men in Madrid that large orders for new passenger and freight cars, as well as for locomotives, will be placed during the next few years.

Unfortunately, the whole south of Spain had an extraordinarily dry summer, on account of which the harvest was extremely scanty and almost led to a famine. Thanks to wise and prompt measures taken by the Government, serious riots have been prevented, and the conditions are again normal. In this connection I wish to mention that Spain offers a first class market for American flour. Considerable quantities of flour have been imported from Black Sea ports, but the quality leaves much to be desired.

The largest industrial establishment in the south of Spain is the famous Rio Tinto Company, in the mines of which some 12,000 men are employed. Large orders for all kinds of machinery and

supplies are still placed through the London office of the company, though many orders are placed direct by the Rio Tinto office. Other important mines in this district are the Minas de Thrasis, the Huelva Copper and Sulphur Mines, the Peña Copper Mines, Limited, the Minas Sotiel Coronada, and the Société Française des Pyrites de Huelva. Andalusia offers a valuable market for American pitch pine, of which immense quantities are used for mining and building purposes. There was an effort on the part of some Spanish gentlemen to have the Government increase the duty on American timber from 6 to 15 pesetas per cubic meter. However, this scheme fell through. When I called on our Minister in Madrid, Mr. William Mill Collier, I was gratified to learn that he had already sent a vigorous protest to the Spanish Government, and with the new Spanish Cabinet, which is

famous Almaden mine. Over 100,000 men are employed in the mining industries, and the annual output of crude minerals is valued at about \$36,000,000. Manufacturers of mining machinery should not overlook this market.

In the agricultural industries but slow progress is made, though the importation of modern machines and implements is increasing. In many parts of the Iberian Peninsula, and especially in the South, the crudest wooden implements are still largely in use. There are plows in many agricultural districts of Andalusia which are almost the same in construction as those used by the Phœnicians. The soil is subdivided among a very large number of proprietors. There are at least 280,000 larger estates which could use agricultural implements. Owners of the small estates pay



DOM PEDRO SQUARE, LISBON.

now a very liberal one, it does not seem probable that any modifications of the tariff will be made.

Field for Mining and Agricultural Machinery.

Spain is very rich in minerals. The Provinces of Vizcaya, Santander, Oviedo, Huelva and Seville abound in iron; coal is largely found in Oviedo, Valencia, Cordoba and Leon; lead in Murcia and Almeria; quicksilver in Ciudad Real. Spain can boast of possessing the largest quicksilver mine in the world at Almaden. This mine has been worked for centuries, and is still giving the largest output of any quicksilver mine on earth. The world's production of quicksilver in 1904 amounted approximately to \$4,500,000, to which Spain contributed \$2,000,000, this coming chiefly from the

only a property tax of from 1 to 10 reales, while those of the above-mentioned larger estates pay a tax of from 500 to 10,000 reales and upward per year. It is to be regretted that but few American manufacturers are sending salesmen to Spain. We could considerably increase our business, and particularly in the line of agricultural implements. Manufacturing industries, especially iron and steel, are relatively little developed, and the country depends to a great extent upon imports. That Spain offers a very valuable field for iron and steel manufactures is best demonstrated by the fact that the imports of metals and their manufactures amounted last year in value to about \$28,000,000. These came chiefly from Great Britain, Germany, Belgium and France. Manufacturers anxious to establish connections with Spain should

appoint local agents, and the best places for such agencies would be Barcelona in the North, Madrid in the Centre, and Seville in the South.

The foreign trade of Portugal is also steadily growing, and the annual imports now amount to over \$60,000,000. Unfortunately, the share of the United States in the imports of



MOORISH MARKET, GIBRALTAR.

manufactured goods is small, which is due to the fact that American manufacturers have paid very little attention to the Portuguese market, whereas British and German houses have their regular connections in Lisbon and Oporto. Great Britain controls 30 per cent. of the Portuguese import trade, Germany 17 per cent. and the United States about 10 per cent. The principal items of import are coal, cotton goods, iron and iron work, machinery, hardware and tools, wheat, sugar, hides and skins, timber, coffee and tobacco. It should also be remembered that large orders for all kinds of supplies for the Portuguese colonies, particularly for Portuguese East Africa, are placed in Lisbon.



AVENIDA, LISBON.

Our Relations With France.

The chief obstacle to a more rapid development of our trade with France lies in the fact that American goods are met in France with not only the highest rate of duty, but with an additional tax, unless shipped direct from port to port in the same bottom. After crossing the Pyrenees the writer proceeded to Marseilles, where he had the pleasure of several interviews with our Consul General, Mr. Robert P. Skinner, who doubtless is one of the best officers in our consular service. It will be remembered that Mr. Skinner headed the American Mission to Abyssinia, thanks to which our trade is being developed in that part

of the Dark Continent. As Mr. Skinner pointed out, the above mentioned tariff discrimination in France amounts in most cases to a serious restraint of trade, and in others to a positive prohibition.

On the other hand, French goods in the United States encounter only the ordinary competition of the ordinary market.

In both countries, Mr. Skinner says, there is the same temperamental unwillingness to organize the merchandising side of trade and commerce.

In spite of these drawbacks we remain one of France's most profitable customers, and our exports to France increase steadily, though slowly. Mr. Skinner

stated that the demand for American

mechanical devices might certainly be increased materially if manufacturers would seek to adapt their wares to local conditions. For example, agricultural machinery in America has been perfected with a view mainly to operations on a large scale. It is entirely suited to our vast Western prairies, but in many instances utterly unfit for use in France, where the 8,000,000 freeholds of to-day are becoming smaller and smaller by division and inheritance. There farmers want small and inexpensive devices. These conditions have created a market, very large in the aggregate, for all sorts of hand implements, many of them very crude, and imported principally from Switzerland and Germany. America is represented almost wholly by plows and some light harvesting machinery, which is associated in the popular mind with the name of the wholesale importing agent, rather than with that of our famous manufacturers.

American Macaroni Wheat for Europe.

Mr. Skinner called my attention to perhaps the most gratifying recent development in our export trade to France. This was the arrival at Marseilles of American macaroni wheat in commercial quantities. Five years ago we produced no macaroni wheat whatever, and when we began to grow it on lands which for the most part were unfit for our ordinary wheats, it was predicted that we could not grow it in America or sell the grain abroad. We are doing both to-day. Our great millers are manufacturing semolina for the new American macaroni industry, and our exporters are sending the grain to the hard wheat centres of Europe, including Marseilles.

American business men have never given to France the persistency they should. "Our foreign trade has moved along the line of least resistance," said Mr. Skinner, "and wherever a troublesome language has been encountered we have found the resistance especially strong. Our people invaded Great Britain without difficulty. We have in the United States a large German element which made work in Germany fairly easy; but when our commercial travelers—or a good many of them—reached



PRESIDENT LOUBET OPENING COLONIAL EXPOSITION.

France they had to employ interpreters, and as the average interpreter is hopeless, discouragement frequently resulted."

A point of interest to Americans as regards France is the increasing tendency of French capital to seek investment in the United States. These investments are rarely speculative, and we are now extending from stable securities to



PORT OF MARSEILLES.

first-class mortgages. "We possess and reciprocate the genuine good-will of the French people," concluded Mr. Skinner; "the manufactures or products of the one, generally speaking, complement those of the other, and to increase our exchange the greatest single need is more American business men to visit France and more Frenchmen to visit America." I can heartily indorse every word Mr. Skinner says.

On the whole, the commerce and industries in France are on a sound basis. American goods are held in high favor throughout the republic. What we need is a commercial treaty which would remove the greatest drawback to a further development of our trade with our great sister republic.

The French Government is also taking energetic steps toward a systematic exploitation of the resources of its foreign possessions. The colonies and dependencies of France, including Algeria and Tunis, have an area roughly estimated at about 4,000,000 square miles, with a population of about 52,000,000. The writer went from Paris to Nogent



COLONIAL EXPOSITION.

sur Seine, where a great colonial exhibition was being held. The exhibits included all kinds of native wares, tropical buildings, fruits, vegetables and spices, cattle, cotton grown in East Africa, etc. There were numerous exhibits from

Annam, Cambodia, Cochin-China, Tonking, Laos, Algeria, Tunis, Senegambia, Ivory Coast, Dahomey, Congo and New Caledonia. To what extent the import trade of the French colonies and dependencies has grown may be seen from the fact that in value it amounted to about \$112,000,000 last year, not including Algeria and Tunis. It is thought that such exhibitions, held from time to time, will awaken greater interest of French financial and commercial circles in the welfare of the republic's foreign possessions.

The Situation in Italy.

The trade situation in Italy is highly satisfactory. Everywhere in the country are signs of prosperity. Particularly in Milan, the commercial, industrial and financial metropolis of Italy, a strong and confident feeling is taking definite shape in the International Exposition to be held there from spring to fall, 1906.

Two important cities where American goods are making steady headway are Genoa and Turin. Genoa is the leading port in the Mediterranean Sea. There are no less than seven lines of steamers trading between that port and New York. The "White Star Line" has also some of its steamers going from Genoa to Boston. Italian products are exported to the United States in great quantities, and American manufactured goods are imported in like manner. American business with Italy is sure to grow. I have interviewed a number of leading merchants in various lines, and they all admit that American-made goods are the best in the world. Italy offers a good market for agricultural implements and garden tools, modern machine tools, sawmill and wood-working machinery, all kinds of small tools, general hardware, typewriters, sewing machines, office supplies, cash registers, furniture, carriages, automobiles, etc. Up to the present time Germany still controls the trade; I saw German



PARK, COLONIAL EXPOSITION.

traveling salesmen with their samples in every hotel. As a rule, they arrive twice a year; their catalogues are printed in Italian, and in most cases their prices are quoted c. i. f. Italian cities.

It is easily understood that this is a great advantage over our system. We could, in almost every line of manufactured goods, sell ten times as much to Italy as we do now if we would approach the Italian merchant in the proper way. Only a few days ago Mr. Luigi Rava, Minister of Commerce, in opening the Commercial and Manufacturing Congress at Venice, said that the value of Italy's foreign trade had risen from \$440,000,000 a year to \$700,000,000, and commercial exchanges with the United States from \$32,000,000 to \$76,000,000.

Conditions in Switzerland.

Switzerland is in the main an agricultural country, though with a growing tendency toward manufacturing. The soil is very equally divided among the population, and it is estimated that there are nearly 300,000 peasant proprietors, representing a population of about 2,000,000. Rye, oats and potatoes are the chief crops, while the principal agricultural industries are the manufacture of cheese and condensed milk. Agricultural and dairy implements are manufactured to a certain extent in the country, but the great bulk is imported from Germany. Swiss merchants are accustomed to buy the very best they can get. In many instances price is only a secondary consideration. American-made

goods enjoy a very high reputation in our little sister republic, and it is gratifying to note that our commercial relations with Switzerland are being extended from year to year, though they are still very far from what they should be. The total annual



imports of Switzerland average now nearly \$100,000,000, and, in order of importance, the following countries contribute thereto: Germany, \$70,000,000; France, \$45,000,000; Italy, \$37,500,000; Austria-Hungary, \$16,000,000, and Great Britain, \$12,000,000. Switzerland is visited, year after year, by thousands of American tourists; in fact, in Lucerne, Interlaken, Berne and Zurich I heard more English than German or French. If more Americans would visit

NATIONAL COSTUME. Switzerland to cultivate trade our business there would be greater. Special attention should be paid to the following lines, well suited for the Swiss market: Light agricultural machines and implements, garden tools, wine presses, distilling apparatus, domestic articles, general hardware, light machine tools, wood-working and sawmill machinery, leather goods, boots and shoes, timber, paper and stationery, office furniture, glassware, paints and varnishes. Switzerland is a country of hotels, and everything required for the installation and fitting up of a modern hotel will always find a ready market. There are nearly 2,000 hotels and large boarding houses in Switzerland, and the capital employed therein amounts to over \$120,000,000.

conditions are sound; exports and imports are growing from year to year, and the purchasing power of the country is almost unlimited. It is a well-known fact that the Emperor, heartily supported by the people, is making the most energetic efforts to enlarge the German navy. As a consequence, one of the largest shipbuilding establishments of the country, and perhaps of the Continent, has decided to build, in addition to its present plant, one of the most up-to-date shipbuilding yards in the world. The new works will be situated in the immediate vicinity of the flourishing port of Hamburg, and it is expected that it will also give a further impetus to the steady growth of the great German steamship companies, the various lines of which now circumnavigate the entire globe.

Need of Reciprocal Tariff Agreement.

However, what we need is a new reciprocal tariff agreement. Throughout the Empire there is a unanimous sentiment in favor of it. The new German tariff, as will be remembered, will go into effect on March 1, 1906, and announcement was recently made in Berlin that on that date Germany will bring to an end the tariff arrangement now existing with the United States. As already mentioned, Germany, next to the United Kingdom, is America's best customer.

The importance of the United States to German foreign commerce is seen from the fact that during the calendar year 1903 this country held first rank among importing nations and third rank among countries of destination of German exports.



BUSINESS SECTION OF BERLIN.

Germany has always been one of our best and largest customers; not only do we ship immense quantities of the products of our soil and fields to the Fatherland, but also of the many various lines of manufactured goods. Germany ranks among our most important buyers. There is practically no line of manufactures which we do not, or which we could not, sell to Germany. Throughout the Empire the industrial, commercial and financial

The principal exports from the United States to Germany during the fiscal year 1904, according to latest accounts of the Bureau of Statistics, were: Unmanufactured cotton, \$109,000,000; breadstuffs, over \$16,000,000; provisions, about \$21,500,000; manufactures of copper, \$11,300,000; mineral oils, \$9,000,000; iron and steel manufactures, about \$5,000,000; manufactured tobacco, about \$5,000,000; wood and manufactures,

about \$4,500,000; oil cake and meal, about \$4,000,000; fertilizers, about \$2,500,000, and agricultural implements, about \$1,500,000.

Up to a few years ago American manufacturers did not give general attention to the markets of Austria-Hungary. The inauguration of direct sailings from American ports to Trieste and Fiume has, however, stimulated our commercial relations with the Dual Monarchy. Undoubtedly, the constant political disturbances between the two countries have had a disastrous effect on commerce and industries, though they have not stood in the way of an increase of the shipments from the United States. In the line of manufactured goods the articles finding the best sale in Austria-Hungary are: Agricultural implements, machine tools, pumps and pumping machinery, emery wheels, varnish, hardware (especially small tools), builders' hardware, locks and hinges, domestic machinery, etc., cash registers, typewriters, leather, boots and shoes, office furniture and office supplies, etc.

A field in Europe which has scarcely ever been touched by American manufacturers is the Balkan States. With the exception of some agricultural machines and implements there is very little American to be seen in those countries. And yet there are many opportunities for a successful introduction and steady sale

of many lines of American goods. That these countries have a commerce well worthy of our close attention is best demonstrated by the following figures, which speak for themselves. The central portion of the Balkan Peninsula is occupied by Turkey,



ACROPOLIS, AT ATHENS

the import trade of which country amounts to about \$125,000,000 a year, the principal countries of origin being Great Britain, Austria, France, Russia and Germany. Turkey offers particularly a market for agricultural implements, tools, railway material, cotton goods, etc.

The value of the total imports of Roumania has during the last few years averaged \$55,000,000, Germany being the principal source of supply, followed next by Austria-Hungary and Great Britain. The principal imports are textiles, iron and steel, machinery, hardware, tools, chemicals, hides and leather, pottery and glassware, drugs, paints and colors and wood.

Bulgaria's imports average \$18,000,000 a year, and include about the same articles as those imported into Roumania.

The annual imports of Servia amount to about \$12,000,000 a year, and include cotton goods, metals, machinery, hardware, tools, pottery and glassware, wood and woodwork, oil, candles, soap, etc.

The Kingdom of Greece imports goods of an annual average value of \$28,000,000, and the great bulk of these imports comes from Great Britain, Russia, Austria-Hungary, Germany and France.

A small but independent country of the Balkan States is the little Principality of Montenegro, the land of the Black Mountains. Its commerce is still in its infancy and limited to an import trade of about \$1,000,000 a year. In other words, the total annual imports of the Balkan Peninsula amount to about \$235,-

000,000, of which very little comes from this country. There are many large and honest houses on the Balkan anxious to do business with America; however, we must go after this trade. Foreign business can only be secured by systematic efforts, but once established, it will prove to be a regular channel for the outlet of our growing overproduction.

Opportunities for American Goods in Holland.

Holland has always been a country of traders. A large business is carried on with the colonies in the East and West Indies, which embrace an area of about 783,000 square miles, with a population of approximately 36,000,000, or about seven times greater than that of the mother country. Only a few duties are levied, and these amount usually to 5 per cent. or less of the value of manufactured articles.

The growth of the commerce of the Netherlands may be seen from the fact that in 1872 the total imports were estimated at 6,451,000,000 kilograms, and the exports at 2,956,000,000 kilograms; in 1903, however, the imports were 31,688,000,000 kilograms and the exports 22,221,000,000 kilograms, exclusive of goods in transit. The value of the total imports for home consumption in 1904 was \$975,000,000. The principal imports of Holland consist of iron, steel, machinery and hardware, cotton and woolen goods, cereals and flour, coal, mineral oil, etc.

It is difficult to arrive at the exact volume from existing statistics, as Holland is a great trans-shipping country; however, American exports to Holland have more than trebled during the last twelve years.

Land in Holland is precious, and where it is cultivated every inch of space is tilled, and where it is used for pasturage every effort is made to induce as great a grass growth as possible. Rye,



NEW RAILROAD BRIDGES, ROTTERDAM.

barley and wheat are the chief articles raised. American mowers and reapers, plows and cultivators and all kinds of garden tools should find a ready sale throughout the country. Holland also offers a good market for flour mill machinery, which, however, should be suitable for the utilization of wind power. Most of the power used in Holland is furnished by windmills. They drain and irrigate lands and do every manner of task for which stationary motors can be used. They have even been adapted to threshing machines, and thus used in the place of horse and steam power. I have seen but a few American windmills in Holland.

but I think that there would be a good market for them. The demand for American lumber in Holland has also steadily increased, with Rotterdam as the chief lumber market.

The writer was astonished to see how American shoes had made headway on the Dutch market. There are a number of large department stores in Rotterdam, Amsterdam and The Hague handling American made shoes exclusively. The average retail price is \$4 a pair. American office furniture and supplies are also being introduced on a large scale.

I was asked by several merchants why manufacturers of felt hats had never tried the market. A well-known importer in Rotterdam told me that derby hats, which could be retailed at from \$2 to \$3, would no doubt find a ready sale.

not only made in the country but also exported, Sweden imports considerable quantities of American-made machinery. Both Sweden and Norway should offer a first-class market for household articles, including meat choppers, fruit presses, wringing machines, kitchen utensils, scales and balances, water filters, sadirons, butchers' tools, sweepers and other specialties. American manufacturers anxious to build up their trade in Scandinavia should establish connections in Copenhagen for Denmark, Christiania for Norway, and Stockholm for Sweden. These towns are the best distributing centres. Denmark is chiefly a farming country, and there is a good demand for all kinds of agricultural machinery and implements, garden tools, etc. The importance



THE PORT OF STOCKHOLM.

Hopeful Outlook in Scandinavia.

Conditions in Scandinavia are assuming their normal aspect again. It is generally expected that with the settlement of the political situation in Norway and Sweden a greater impetus will be given to the trade of both countries. Broadly speaking, I think that the separation of the two countries will benefit both, and this opinion is shared equally by the leading business men of Christiania and of Stockholm.

Norway imports almost everything in the machinery and hardware line, with German goods predominating. Heretofore Norwegian merchants have imported considerable quantities of saw-mill and wood-working apparatus, machine tools and other light machinery from Sweden, but the tendency is now altogether toward American goods.

Of all Scandinavian countries, Sweden possesses the largest industries. It has highly developed iron works, the best iron mines in Europe, and a very extensive lumber and wood pulp industry. Steady progress is also being made in the manufacture of paper.

In spite of the fact that certain lines of machinery are

of Copenhagen as a business centre may be gathered from the fact that it has a population of nearly 500,000, almost one-fourth of the total population of Denmark.

Russia Must Buy Much Abroad.

As soon as the present internal disturbances in Russia shall give place to more normal conditions, there is every reason to believe that the United States will benefit from the new order of things. The industries of the country must be resumed even more energetically than heretofore in order to repair the enormous losses occasioned by the war. The vast resources of the empire, moreover, temporarily neglected by reason of external and internal hostilities, will be developed probably on an even more extensive scale than in the past.

Russia is by no means able as yet to manufacture all her people need. Naturally she will purchase where she can buy to the best advantage. In the words of Premier Witte, "It rests with the American manufacturers and merchants to what extent they will share in this revival."

AUTOMATIC TELEPHONE EXCHANGES IN CUBA.

With the enlargement and extension of the telephone plant, the complexities of the mechanism increase in a ratio out of all proportion with that of the results achieved. After the central station has reached a certain size, the amount of installation required to make accommodation for a few more subscribers is appalling,

to the extent that the officials are sometimes tempted to turn their backs on new business. This fact is one of the conditions which are at present giving an impetus to the introduction of the automatic telephone.

The automatic system has been slowly blazing a way for itself for a long time. In fact, its invention may be regarded as almost contemporaneous with the Bell and other systems, for the

first patents on the automatic exchange were taken out soon after these more familiar telephone instruments made their appearance in public. For twenty-five years, however, it has been undergoing a course of improvement, simplification and perfection, which condition has been reached at last, a fact demonstrated by the statement that there are now in operation in this country plants aggregating 100,000 subscribers. While this may be a comparatively small percentage of the total number of telephone patrons, it is sufficient to show that the new system has made a place for itself, and has received the recognition of the business world. The man who was most responsible

for the automatic exchange was A. B. Strowger, and the first installation was made under his direction twelve years ago, after he had spent no less than fifteen years in working out its details, eliminating its imperfections and overcoming its limitations. That it stands to-day, a perfectly practical institution has been manifested by tests of the most rigorous character in actual service. Furthermore, on account of its many great ad-

vantages and economies of operation, it bids fair to revolutionize the telephone industry.

The plants now in operation at present vary in size from 25 to 10,000 subscribers, but the Automatic Telephone Company, which holds the Strowger patents, has an installation now in operation in Cleveland, O., which is designed for an ultimate capacity of 19,000 lines. At present the capacity is only one-third of this, but additions are being made very rapidly, and it is hoped to approach the limitations of the plant in a short time. The addition of these extra lines can be made without any enlargement of the present equipment. A view of the Dayton apparatus is shown herewith.

This company is at present engaged in making an installation of a 15,000-line at Havana, Cuba, and a 600-line at Mari-anao, a suburb of the Cuban capital. Here the ordinary complexities of the telephone exchange are increased by the cosmopolitan character of the people. In order to meet the existing conditions with the ordinary type of exchange, it would be necessary to employ a staff of linguists at the switchboard. With the automatic the matter of language does not enter into the matter at all, for the connection is made by the person desiring the conversation. There are no girls at the exchange, the only employees required being a man or two to make inspection of the instruments for the purpose of remedying any "trouble" with the instruments.

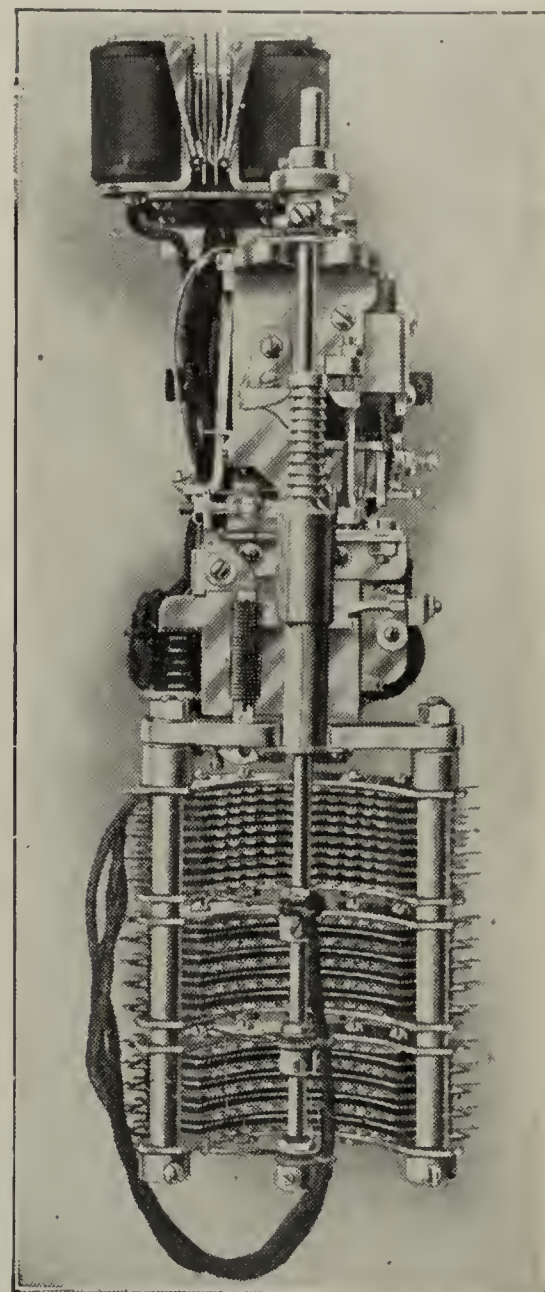
Generally speaking, the automatic telephone, so far as the equipment at the house or office of the subscriber is concerned, is much like the ordinary instrument, having the usual receiver, transmitter, bells, etc., adding outwardly only the calling dial, a circular metal disk about five inches in diameter, having on its periphery 10 finger holes numbered from 1 to 0. The dial is capable of rotation, being pivoted on an axis at its center, and its operation constitutes all that a subscriber is called upon to perform in selecting the number desired. Supposing the number 542 is to be called. The subscriber first removes the receiver from the hook, places his index finger in hole number 5 and turns the dial downward as far as possible—that is, to the stop provided to limit the



AUTOMATIC DESK TELEPHONE.



AUTOMATIC WALL TELEPHONE—
MAKING A CALL.



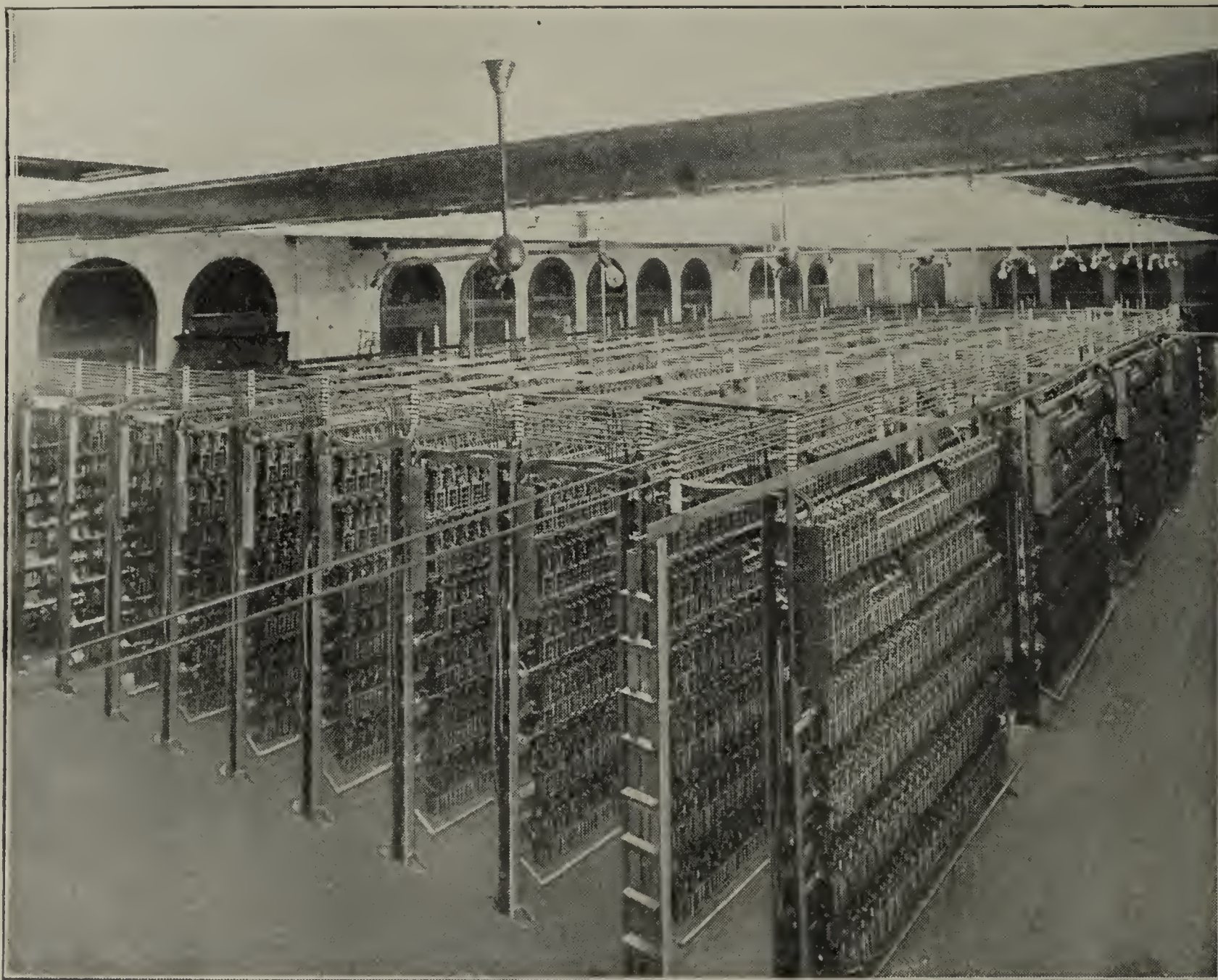
AUTOMATIC TELEPHONE SWITCH—
FRONT VIEW.

distance through which it may be revolved. He then releases it and the dial is restored to normal position by the action of a spring within. This operation is repeated for 4 and 2. It then remains only to press the black button underneath the dial to ring the bell on telephone number 542, the connection having been established as the result of the several operations of the dial. When conversation is completed disconnection is accomplished by the hanging up of the receiver, which acts instantaneously, clears the line and leaves it open for a second call if one is to be made. If the line called is busy a buzzing sound immediately occurs in the receiver of the calling 'phone to give notice that such is the case.

At the central station the difference in the appearance of the

unit at the automatic exchange consists of three "fingers" or pointers, one of which responds to each operation of the dial by the calling party. Their action is almost human. They move quickly around, one after the other, and stop exactly at the right place to establish the desired connection, remaining at that point until the conversation is finished. The operation of hanging up the receiver releases the fingers and they move back to the starting point ready for another call.

Banking Facilities in Abyssinia—The long-discussed plan for the establishment of the Bank of Abyssinia is about to be realized, all objections heretofore made having been over-



THE AUTOMATIC TELEPHONE EXCHANGE OF THE HOME TELEPHONE COMPANY, DAYTON, OHIO—6,000 LINES.

new plant is very striking. Instead of the long row of girls seated in front of a switchboard, there are to be seen racks containing the units by which the connections are made as the dial is manipulated at the place of the subscriber. There is a unit for each line, the unit measuring 13 inches high by 4 inches wide, 4½ inches deep, and is known as the selector switch. This switch constitutes the necessary equipment in the central office for the operation of one telephone, and is connected with the telephone assigned to it by means of a pair of wires, making what is generally known as a metallic circuit. It is extremely simple in construction in view of the character of work it is called upon to perform. An interesting feature of the construction of the

come. The capital of the new Bank of Abyssinia is £500,000 in 100,000 shares of £5 each. Its principal place of doing business will be Adis Abeba, but its real headquarters will be in Cairo, and, according to its incorporation, it will be governed by the mixed codes jurisdiction of Egypt. The new bank is really a branch of the National Bank of Egypt. This event, in view of the daily growing importance of Abyssinia, places Egypt, and through her England, in a very influential position in the development, both commercial and industrial, of that new country, and this new enterprise will go far toward counterbalancing the influence acquired by France through the construction of the New Ethiopian Railway.



AMERICAN EXPORTER

LOGGING TRAIN DRAWN BY A FIVE-WHEEL ENGINE.

FIVE-WHEELED AUTOMOBILE.

An entirely new idea in the construction of automobiles is being advanced by a Chicago inventor, who has already put the principle involved to a severe test in the operation of a big machine for hauling logs over the snow in the lumber regions of Michigan. If it were not for the success achieved in this very heavy work, and for the endorsement of no less distinguished a person than ex-Secretary of War Alger, the observer would be apt to ridicule the idea as applied to an automobile, for it involves the use of a fifth wheel or drum running along on the ground and pendent from the forepart of the vehicle.

The car is driven by this drum or wheel. It consists of two side disks between which face-plates are bolted. The plates are of soft, cast steel, which is practically indestructible, and has the faculty of readily taking hold of granite or stone pavements. These plates are readily removable, and in winter it is designed



NEW AUTOMOBILE SURMOUNTING AN OBSTACLE.

to replace them with toothed plates, which will take hold of snow and ice.

The automobile shown in the accompanying cuts has a 4x4-inch cylinder with gasoline motor placed in the front. The transmission is from the engine to a counter-shaft, and from the counter-shaft to the driving-wheel through a chain. A gear transmission has been found desirable in heavier vehicles.

The drum of the vehicle is 26 inches in diameter, and has a 5-inch face, and a drum of this width, shod with rubber tires, has been found sufficient for the purpose of an ordinary automobile carrying as high as five passengers. The drum, or driving wheel, is supported by two hinged arms which project downward at a slight inclination from the forepart of the vehicle, carrying the



NEW AUTOMOBILE AS A SLEIGH.

wheel about the center, as stated above. This frame is drawn forward by tension springs. The function of the latter is to hold the drum to the ground, thereby increasing the tractive power of the device. On anything but a very bad road, the operation of the drum, or driver, is entirely automatic, and at other times, it is under the control of the operator. On a bad road, or when surmounting any unusual obstacle, the action of the drive-wheel is to raise the vehicle, at times taking practically the entire weight of the car on itself, and relieving the other wheels accordingly. With the drum carried on longer arms, the inventor has surmounted a 10-inch obstacle under each wheel. The drive-wheel is made hollow, and the inventor says that it can be utilized as a muffler, or when a steam engine is used on the car, the drum may be used as a muffler and as water tank as well.

This arrangement dispenses with the differential gear, and therefore makes possible the use of a solid rear axle. It is also said to render the use of rubber tires on commercial vehicles unnecessary.

In one of the pictures the car is shown mounting an 8-inch obstacle, and even better performances in this line can be done by the use of larger arms supporting the drive-wheel. In another illustration the vehicle is shown standing on skates or runners, which is a simple manner of transforming the automobile into a snow vehicle. The runners are here held in place by means of rods secured to the front axle.

The inventor of this mode of propulsion, George T. Glover, of Chicago, Ill., lays great stress on the point that the fifth wheel practically carries the weight of the entire outfit when the power is applied. He claims that this feature makes the machine available where the ordinary means of propulsion, by the rear wheels, is insufficient. Such a machine, he says, is not only feasible, but invaluable for farm work, as it may be used in drawing a plough or other implement over soft ground, and also utilized in taking the farm produce to market, the character of the road or the season of the year making no difference in the use of the machine.

The tractive capacity of the machine shown herewith was demonstrated in a test made by Mr. Glover, when the machine succeeded in hauling two 2-ton coal wagons without a load, but with the wheels of one of them locked, so as to slide over the ground. In order to further demonstrate the practical operation of this device, as applied to commercial purposes, he attached the car to a 2-ton coal cart loaded, which was successfully drawn. In the former instance, it was necessary to put two men in the seat of the automobile to overcome the tendency of the driving apparatus to lift the vehicle from the ground. Mr. Glover has under construction trucks of 100 and 200 horse-power, the latter being fitted with a 12-cylinder engine, and designed for the purpose of hauling a train of stone-laden wagons.

Long Distance Trolley Ride.—The trolley road is developed to a greater extent in the United States than any other country in the world, and those abroad who have followed these matters, will be interested to know that a continuous service between New York and Chicago may be among the transportation possibilities of the near future. The distance is over one thousand miles. William S. Reed, a builder of railroads, has organized a syndicate, which has purchased the Chicago Electric Traction Company, and has organized two other companies, which will complete the gaps that now prevent a continuous ride on electric roads between the cities named.

TRADE LITERATURE.

The latest catalogue of the Bryan Manufacturing Company, of Bryan, Ohio, describes Champion wheelbarrows for all purposes, made of wood or steel. Two styles of steel tray barrows shown are especially designed for export. These are capable of shipment in very compact form.

A book of plows, cultivators, rollers, harrows and similar implements has been issued by the Ohio Cultivator Company, of Bellevue, Ohio. The book shows evidence of careful preparation, and is elaborately printed. It is complete in every particular.

The Jones Speedometer Company proposes to issue at more or less regular intervals a publication in the shape of a bulletin dealing with the speed indicators for vehicles made by the

company. Bulletin No. 2 has just been issued, and is very attractively illustrated.

The Colorado Iron Works Company, of Denver, Col., has issued a very carefully prepared book entitled "Some Details as to Smelting Practice and Equipment." The book must prove of great value to anyone interested in ore smelting.

Springless automatic weighing scales, the product of the Toledo Computing Scale Company, of Toledo, Ohio, are described in a new booklet recently issued by that company.

The Bishop & Babcock Company, of Cleveland, Ohio, has issued a handbook of the products of that company, which includes beer pumps, bar cocks and faucets, hand air pumps, carbonic beer pumps, ice boxes, work boards for bars, and all beer pump supplies.

A new catalogue of the Mills Novelty Company, of Chicago, Ill., contains descriptive matter and illustrations of the latest things in slot machine amusement devices. A great variety of these machines is shown.

Bulletin No. 310 of the Holtzer-Cabot Electric Company describes magneto power generators and power generator combinations. The office of the company is at Boston, Mass.

An interesting line of carriages in the white is shown in the catalogue of the Schubert Brothers Gear Company, of Oneida, N. Y. Besides carriages and wagons, considerable space is devoted to running gears generally.

The Flint & Walling Manufacturing Company, of Kendallville, Ind., has an office poet on its staff, whose duty is to sing the praises of the "Hoosier" pump. The verses are being distributed on the instalment plan among the friends of the company. The first effusion has just been published on a mailing card, and will be followed by other verses.

Gillinder & Sons, Incorporated, of No. 135 Oxford street, Philadelphia, Pa., have just issued a new catalogue of the decorated domes put out by that firm. The book contains five colored plates of lamp chimneys.

Catalogue No. 16 of the Foos Gas Engine Company, of Springfield, Ohio, contains excellent views of the portable and permanent engines made by the Foos Company, as well as some lucid explanations of the essential features of these engines.

"Good Roads for the Wayne" is the title of a brochure issued by the manufacturers of the Wayne automobile. It contains photographs of some marvelous achievements by the Wayne car during the course of a rough cross-country run.

The latest catalogue of the "Best" Street Light Company describes a hundred different styles of lamp fixtures adapted to this system. The lamp burns gasoline vapor through the means of an incandescent burner, and is said to be very economical and suited for all illuminating purposes. The office and factory of the company are at Canton, Ohio.

Bulletin No. 3 of the National Battery Company, of Buffalo, N. Y., describes electric storage batteries of the "unit accumulator" type for car lighting.

PERFECTION OF AMERICAN SHOE MACHINERY.

The American shoe has worked its way into all the leading countries of the world, and its inroads have been viewed with alarm by the shoemakers abroad, who see their own work rejected by their former patrons, and the American shoe received with favor wherever it is introduced. The development of machinery has been one of the leading causes of the perfection of the shoe product of this country. The economy, as well as the excellence of the machine work, in this connection, is clearly shown by some comparative statistics compiled by the United States census office.

To make 100 pairs of women's cheap grain leather, pegged shoes, single sole, plain toes, by hand, in 1868 there were required two men, 56 operations, 538 hours, and the average labor cost

Incidentally, other statistics show that the American shoemaker is making more money to-day than he did ever before.

Considering the quality of machine work, it has for some time been generally considered by shoemakers and others engaged in the trade, that the stitching of at least one type of machine was equal in every way to hand work. Recent tests indicate that the machine work is now superior. Furthermore, it was shown that hand stitching done toward the end of the day was far inferior to that done by the workman in the morning, when he was fresh at his bench. The machine stitching, however, proved to be superior to the workman's best efforts.

STEAM PLOWING.

Improvements in agricultural machinery have been made with rapidity in the past decade, and while tilling has been somewhat



STEAM PLOW OUTFIT.

was \$1.09. To make the same number of the same grade of shoes in 1895 there were required 269 men, 98 operations, 83 hours, and the average labor cost was 20 cents per pair.

To make 100 pairs of turn, kid lace shoes in 1858 there were required one workman, 67 operations, 1,025 hours, and the labor cost was \$2.53 a pair. To make the same number of the same grade of shoes in 1895 there were required 85 men, 95 operations, 80 hours, and the average labor cost was 18 cents per pair.

To make 100 pairs of fine grade, kid, welt shoes in 1875, there were required one workman, 102 operations, 1,996 hours, and the average labor cost was \$4.99 cents per pair. To make the same number of the same grade of shoes in 1895, there were required 140 workmen, 140 operations, 173 hours, and the average labor cost was 54 cents per pair.

simplified by the use of gang plows drawn by many horses, the advances made in this respect in the earlier years did not keep abreast of those in other branches of agriculture. Inventors and manufacturers have been more recently giving some attention to this branch of farming, and the result is that plowing by steam is now an assured success.

The illustration shown herewith is an actual field scene demonstrating the operation of the new Avery Steam Plow Outfit. This photograph was taken during a four days' exhibition recently given by the Avery Company of this plow on a large farm near Peoria, Ill. The engine shown is a 22 horse-power, double cylinder, undermounted and equipped with the company's new steam plow, this having ten 14-inch bottoms, cutting a strip 12 feet wide. There were many visitors and the exhibition

was a pronounced success. The occasion was an excellent opportunity to show the possibilities of steam plowing, in that the ground was exceedingly dry; in fact so hard that farmers in that neighborhood were at the time unable to do their plowing with horses. This gave the opportunity of testing the pulling

In another illustration is shown a plow being drawn by an engine designed and constructed by the Aultman & Taylor Machinery Company, of Mansfield, O. As an evidence of the value and capacity of this machine there is referred to by the company the instance of a resident of Morton, N. D., who purchased a 25 horse-power



TRACTION ENGINE AND PLOW.

qualities of the engine and also the "go-in" qualities of the plow itself.

Notwithstanding the condition of the ground it left the surface very smooth and more completely pulverized than would have been possible with ordinary plows. One would naturally think that such a large outfit would be unwieldy, but the visitors were surprised when the plow came to the end to see the engineer open the throttle and all ten plows were raised out of the ground simultaneously. The machine moved briskly over the ground and the turn at the end was quickly made.

When steam plowing under favorable conditions can be done for from 30 cents to \$1 per acre it means there is going to be a great deal more of it done than heretofore, especially when the engines of these outfits, as in this case, are adapted for other uses, such as threshing, sawing, shelling and other farm and road work.

Among the interested spectators at this test was V. Garcia Fuentes, of Guadalajara, Mexico, general agent of the Avery Company in Mexico, and who says that there is an urgent demand for power plows in that country; and also E. F. Thomas, of Guanico, Porto Rico, who operated one of these engines on the island during the past season, and who is interested in the matter of steam plowing for sugar-cane plantations. Both these gentlemen and others present expressed themselves as being well pleased with the results.

engine for plowing purposes, and this machine has a record of an average of 15 acres per day for ten days, pulling four gangs of two plows each. This work was done with the consumption of 1,600 to 1,800 pounds of coal per day and 48 to 50 barrels of water.

Steamship Contract Renewed.—Consul-General Foster, of Ottawa, advises the Department of State that on August 14 the Canadian minister of trade and commerce entered into an agreement with the Union Steamship Company, of New Zealand (Limited) as managing agents of the Canadian-Australian Royal Mail Line, for the continuance of the Australian steamship contract for a further period of one year from the first day of August, 1905. This renewal contract provides for the same four-weekly mail service to be furnished for a further term of twelve months from the first day of August, 1906, unless either party gives notice three months before July 31, 1906. The Canadian Government is to pay a subsidy of £37,090 18s. 2d. per annum; this being an increase of £3,000 upon the Canadian subsidy previously paid. A like increase of £3,000 is to be made to the subsidy paid by the Australian Government. The total subsidy under this new arrangement to be received by the Canadian-Australian Royal Mail Line from the different Governments is, it is understood, £64,500.

A METAL ROADBED.

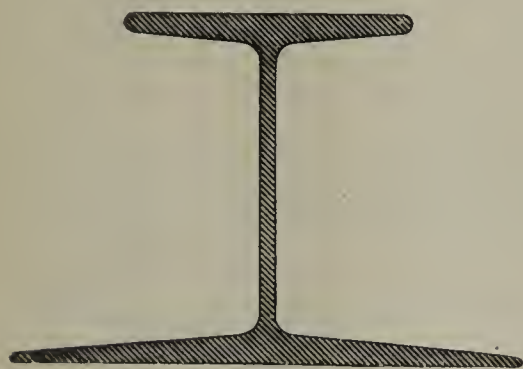
The idea of using a steel cross tie to replace the present wooden tie is one which is not only consistent with good engineering, but which, from the growing scarcity and consequent increase in the price of wooden ties, is daily more forcibly presenting itself to those charged with the maintenance of our railways in such condition as to economically and safely carry the heavy wheel loads imposed upon them by the advances of modern practice.

On account of the former abundance and cheapness of wood, together with the comparatively light wheel loads prevalent up to the beginning and during the early part of the last decade, the tie question was one which naturally solved itself. The increased weight and speed demanded of railroad equipment, and the growing scarcity of wood,



STEEL CROSS TIES IN PITTSBURG RAILWAY TRACK.

have made it necessary to find some substitute, and in this connection the Carnegie Steel Company, of Pitts-



weight per foot of 19.7 pounds. An examination of the section, as illustrated, shows its simplicity.

The broad lower flange with its flat surface gives a uniform bearing on the roadbed, and can be tamped with as good results as a wooden tie. The depth is such that the tie can be held firmly in the ballast. The uniformity of spacing, it is claimed, will admit of uniform deflection in the rail, which condition makes a perfect riding track, thereby causing the least possible wear on rail and rolling stock.

The rail is secured to the tie with rolled steel clips fitting accurately on the flange of the rail, and held in place by means of four three-quarter inch bolts, thereby making a positive fastening.

The objection to many types of steel ties has been the

light weight, which has been unsatisfactory where heavy traffic predominates. The weight of a standard 8½ foot tie of this section is 167.4 pounds, or about the weight of a good oak tie, in addition to which may be added the weight of the



STEEL CROSS TIES IN MAIN RUNNING TRACK NEAR CASTLETON, N. Y.

column of ballast resting on the lower flange, which gives an increased resistance, tending to keep the tie on its bed.

Several of these ties were put in track experimentally at Sandusky, Ohio, on the Lake Shore & Michigan Southern Railway about six years ago, and they are now in as good condition as when installed, showing practically no corrosion. The first cost is somewhat in excess of that of a wooden tie, but when safety in construction, saving in maintenance and reduction in renewals are considered, the actual cost at the end of a number of years would be very small.

While experiments have been carried on for the past six years, there had not been any special effort to place these ties on the market until last year, when orders covering sufficient quantities to equip from one-half mile to a mile of track were secured from the Lake Shore & Michigan Southern



STEEL CROSS TIES IN SWITCHES AT HOMESTEAD STEEL WORKS, MUNHALL, PA.

Railway, New York Central & Hudson River Railroad, Duluth & Iron Range Railroad, Bessemer & Lake Erie Railroad, the Pennsylvania Lines and the Union Railroad. The Bessemer road has this year placed an order to equip 10 miles of track, the results of the past having been such as to warrant additional trials. The Manufacturers' Railway of St.

Louis and the Northern Pacific Railroad have placed orders for this year's renewals.

The Pittsburgh Railways Company, operating all the electric lines in Pittsburgh, Pa., have installed a section of track where their traffic is heavy, as shown in one of the accompanying cuts. While this track was laid in ballast in the street, without any concrete, the surface and line have remained perfect.

Elsewhere will be seen a photograph showing the section of tie used in switches in a ladder at the Homestead Steel Works, Munhall, Pa. This ladder consists of a succession of sharp turnouts where the heaviest rolling stock and heaviest tonnage possible are handled. Prior to this installation wooden switch timbers were in use, and even though tie plates were applied at every bearing point, the track required constant repairs. Since the installation of the steel ties, practically no labor has been required, except that of the regular rounds of the track watchman.

The steel tie in track construction is not only consistent with good engineering, but from the growing scarcity and consequent increase in the price of wooden ties is daily more forcibly presenting itself to those charged with maintenance. Almost every other item entering into the construction of a railroad has been improved upon, on account of the fast increasing weight of the rolling stock demanded to handle the increased tonnage. The wooden tie came with the railroad, and is about the only remnant of early railway and engineering practice. In fact it is probably only a question of a few years when steel ties will be as generally used as wooden ties are to-day.

Physical tests of the tie illustrated have been made, which show that a load of 170,000 pounds can be placed upon it before the least evidence of failure is noticed, while it required about 216,000 pounds to crush it. In all the tests the fastening was not injured in any way.

AMERICAN EQUIPMENT OF KOREAN RAILROADS.

The Korean railroads now in course of construction are ordering largely from American manufacturers. The material and rolling stock of all these roads, according to the *Manila Daily Bulletin*, will be manufactured chiefly in the United States. The first railway in Korea, that between Seoul and Chemulpo, was built in 1899 by an American concessionaire of American material and equipped with American rolling stock. This road was sold just before completion to a Japanese company, and has proved a commercial success.

This company expects, within the following month, to complete its new line, begun in 1901, from Seoul to the southeastern port of Fusan, a distance of some 268 miles. This will establish quick communication between the capital city of Korea and Japan by a connecting ocean ferry from Fusan to Moji, Japan.

This railway, like other Japanese lines in Korea, is of standard American gauge (4 feet 8½ inches), and is to be equipped with American locomotives, of which a great number have been already delivered, five of them 110 ton express locomotives.

It was stated that in 1901 and 1902, when rails were first required for the construction of this line, American manufac-

turers were so pressed with orders that they could not even supply the home demand. Hence the first rails imported were of British make, and with them a considerable portion of the line has been laid; but more recently large quantities of American rails have been used, and the bridgework of the line is largely of American manufacture.

THE AUTOMOBILES OF TOYLAND.

Since the automobile has become such a common sight on the streets and highways, it is the early ambition of every small boy to preside over a self-propelled vehicle of some kind. All cannot be supplied with a spick and span article from the toy factory, and the result is that a miscellaneous collection of home-made vehicles is to be seen at every hand. Marvelous ingenuity has

been exercised in the construction of these affairs that they should resemble, in their essential features, the luxurious vehicles of pampered aristocracy of which flitting glances are to be obtained as they dart along leaving a trail of dust to mark their passage.

No lesser amount of ingenuity has been exercised in



the factories where these toys are made in large quantities, to secure wagons which will answer the demands of the small boy, and at the same time receive the approval of the parent, who looks over the little car with a critical eye for stability and strength before entrusting the child upon it.

One of the newest designs in these toys is shown herewith, the product of the Hill-Standard Company, of Anderson, Ind. It is known as the "Little Hottentot," and is designed for a small child. The propulsion is done by hand, and the steering by the feet. The power transmission is quite simple, without gearing, so that it is easy to propel and cannot be worked up to a dangerous speed. It is almost entirely made of metal, and weighs twelve pounds.

For larger children the same firm makes a different style of carriage, notably, one known as the "Irish mail." This is built so close to the ground that it is said to be impossible to upset it. It is propelled by an oscillating handle, but in this case the driving mechanism is geared, so that a high speed can be worked up when desired. The "Irish mail" is made in several sizes. The automobile accommodates two passengers, but in the larger sizes provision is made by which each passenger, seated face forward, may contribute his share toward propelling the carriage. In the smaller sizes, there is supplied a detachable handle, which can be quickly put in place in the rear, and this also enables each rider to do his share of the work. In the latter instance they are seated back to back.

SOLID TIRE WITH COMFORT.

The statement is seriously made that 90 per cent. of the delays in an automobile service is due to tire troubles, and in view of this, any one can appreciate the fact that there is a demand for something that will take the place of the pneumatic tire. What seems to meet this problem in a satisfactory manner is the Swinehart

Cushion Tire, made by the Swinehart Clincher Tire & Rubber Company, of Akron, O. The distinguishing features of this tire are the concave sides and the corrugated tread, a combination which is said to afford almost, if not quite, as much comfort as the pneumatic, and yet give a service superior to that of most solid tires. The

Swinehart tire is said to excel others of its kind in that an improved method has been used in fastening it to the wheel-rim which makes it absolutely secure.



AN EARLY 1906 AUTOMOBILE MODEL.

The 1906 model of the Orient Buckboard, made by the Waltham Manufacturing Company, of Waltham, Mass., embraces a number of new and interesting features. This machine is regarded as a very handy one, adapted for pleasure as well as practical purposes, and is sold at a figure that makes it available to the person of limited means. It is what is termed a friction



BUCKBOARD FOR CITY OR COUNTRY USE.

driven car, the power being transmitted through two friction discs, as shown in the cut. The disc of the engine shaft has a metal face, and the wheel which engages upon it is covered with a special fibroid having a remarkable power of adhesion. The power is transmitted to the rear wheels through double chains. The degree of contact between the two discs is regulated by a ball thrust in the rear of the metal disc which is operated by the left-hand foot lever shown in one of the views of the complete car, the driver controlling this from the seat. This lever has a ratchet action giving it five different degrees of contact, this contact being increased as desired on heavy grades. The right-hand

foot lever is the control brake of the car. The engine is rated at 4 horse-power, but actually develops about $5\frac{1}{2}$ horse-power.

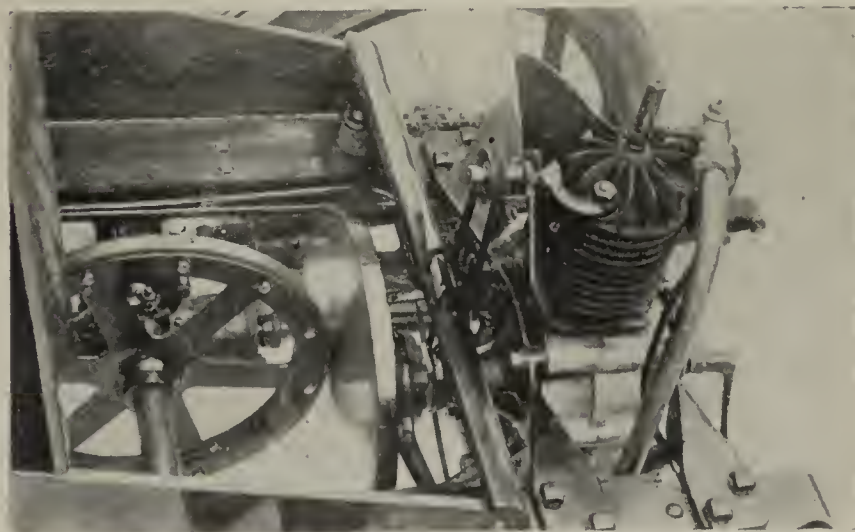
In the new model the engine is mounted on the frame, which is supported by strong elliptical springs instead of



REAR OF BUCKBOARD.

being mounted on the rear axle, as in the earlier models. The clearance from the ground is now 10 inches instead of 6 as heretofore.

The capacity of the car is forcibly demonstrated by some of its performances. In a recent endurance test, this car made 121 miles in $6\frac{3}{4}$ hours on 4 gallons of gasoline and 1 1-3 pints of oil. The following day, in the same test, it made 93 miles in $5\frac{1}{4}$ hours on 3 gallons of gasoline and 1 pint of oil. Immediately following this test, the car ascended the famous landmark known as "Old Boston Rock," an eleva-



THE FRICTION GEARING.

tion of 562 feet. The last part of the climb is up a flight of 35 stone steps with an official grade of 32 per cent. The Buckboard made the climb twice in one day with two passengers in the car. In a later test the car, with two passengers, climbed an official grade of 22 per cent. on the reverse gear; in other words, going up backward.

LOCKS THE WINDOW WHEN OPEN.

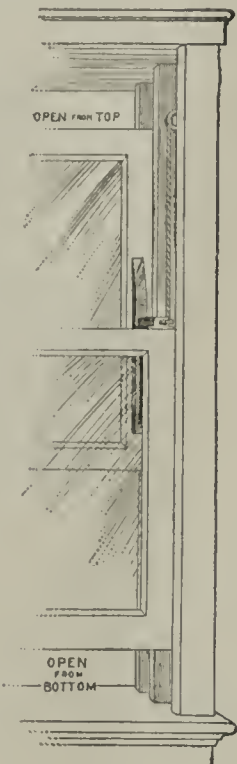
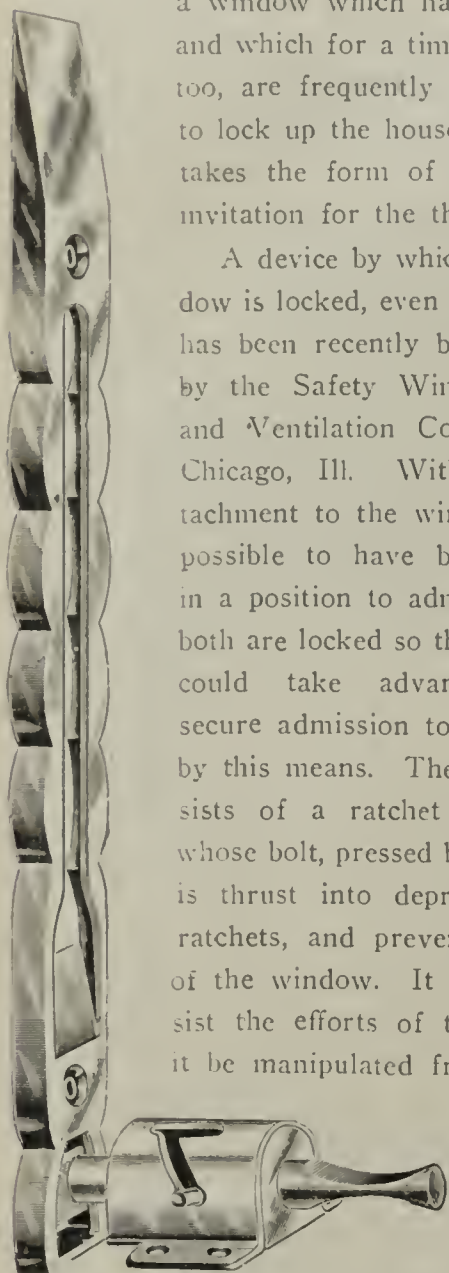
About nine out of ten sneak thieves and house robbers find their way into a residence through the neglect or carelessness of the inmates in leaving doors and windows open. The most

common thing is for the thief to take advantage of a window which has been left open for ventilation and which for a time is unguarded. Such windows, too, are frequently overlooked when it comes time to lock up the house, and thus takes the form of a standing invitation for the thief.

A device by which the window is locked, even when open, has been recently brought out by the Safety Window Lock and Ventilation Company, of Chicago, Ill. With this attachment to the window, it is possible to have both sashes in a position to admit air, but both are locked so that no thief could take advantage and secure admission to the house by this means. The lock consists of a ratchet and lock, whose bolt, pressed by a spring, is thrust into depressions or ratchets, and prevents raising of the window. It is said that the device will resist the efforts of the burglar's "jimmy," nor can it be manipulated from the outside by means of a

wire or knife, which is a fault so common with many sash locks. Thus safety is secured with absolute freedom. The lock works auto-

matically, but it can be thrown out of service in a second when its functions are not desired.



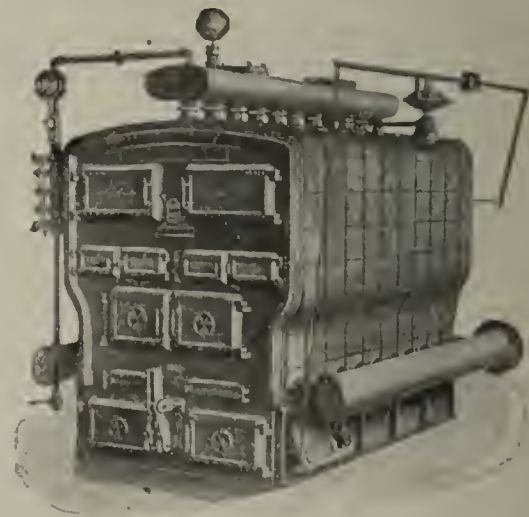
AMERICAN PRUNE INDUSTRY.

In the United States 100,000,000 pounds of prunes are eaten yearly. Prior to 1886 the supply came almost wholly from France and the Danubian provinces, and sold under the designation of "French" and "Turkish" prunes. In the year referred to prunes of American growth appeared on the market, and with each succeeding year the supply has increased until the importation of foreign fruit has been reduced to extremely small proportions. Much the larger portion of the prune supply is from the southern part of California, where climatic peculiarities are exceedingly favorable for its production. In Santa Clara County alone there are 3,700,000 trees growing on 37,000 acres—100 to the acre. The quantity of prunes somewhat exceeds 110,000,000 pounds—more than enough for the requirements of the whole country, but the excess, with that raised in other localities, is needed to supply the export demand from Great Britain, Germany and France. The first plum trees planted forty years ago in California were shoots from the "Petite" and "Epineuse" varieties from France. The original varieties have been greatly improved upon.

Ten thousand trays of fruit spread out in one unbroken tract may be seen in Santa Clara in the drying season. When sufficiently cured the prunes are stored in separate bins and there allowed to "sweat," this process taking from ten to twelve days, when they are ready for market.

VALUABLE BOOK OF SANITARY SUPPLIES.

A year book of boilers, radiators and sanitary supplies is being circulated by the Pierce, Butler & Pierce Manufacturing Company, of Syracuse, N. Y. These catalogues are handsomely made up and are compiled in such a manner as to be of special interest to heating engineers, architects and contractors. The Pierce line of heating boilers is large, comprising thirty different styles, of boilers, laundry and tank heaters, ranging in size from an 80-gallon tank heater, to a house



AMERICAN STEAM BOILER.

heating water boiler, with a capacity for warming from 165 to 11,000 square feet of radiation, and steam boilers with capacities from 100 to 6,600 square feet.

The large number of boilers are illustrated and described in the book in a way to command the attention of the trade. Twenty-one pages of the catalogue are devoted to the Pierce Radiators, ranging in size from the one column 18 inches high, to the four-column 44 inches high, and including a number of semi-direct, indirect and wall patterns, all of which are made in either ornamental or plain designs.

In the plumbing section a display of the most complete line of sanitary fixtures is shown. These goods include solid porcelain and porcelain enameled baths and lavatories, kitchen sinks, foot-baths, sitz tubs and laundry trays; also marble lavatories, closets, showers and other fixtures. The Pierce, But-



LITTLE GIANT TANK HEATER.

ler & Pierce Manufacturing Company has been in the heating and plumbing business for over half a century, and its plants are daily turning out large numbers of complete boilers, radiators and similar fixtures.

According to the annual report of the Commissioner of Patents of the United States, for the year ending June 30th last, the receipts were \$1,737,344, and the expenditures \$1,472,467. The business of last year is said to have been the largest for any single year.

PLANER FOR CABINET WORK.

Among the newest additions to the line of woodworking machinery is a cabinet planer especially designed for use in furniture and cabinet factories or wherever a fine, smooth surface is required.

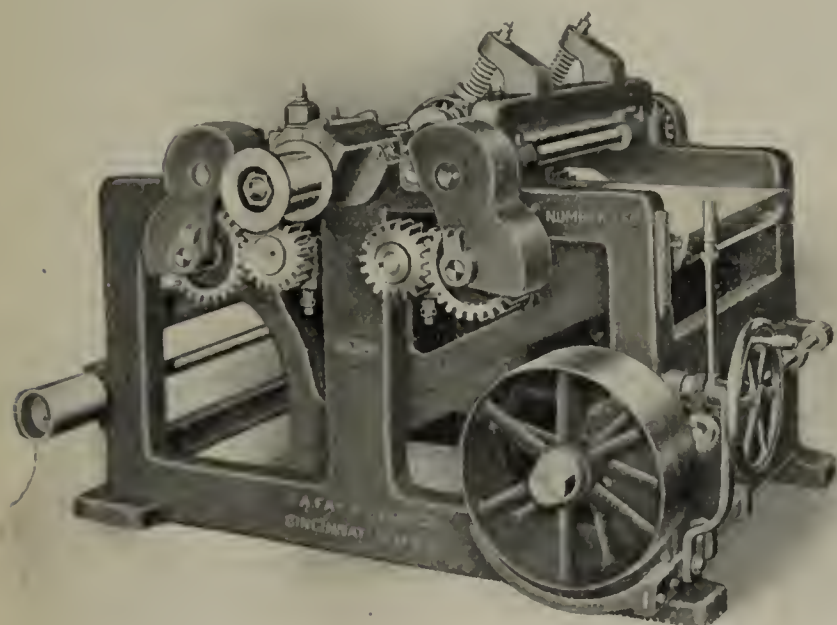
This new piece of apparatus is shown herewith from the shops of the J. A. Fay & Egan Company, of Cincinnati, Ohio.

The heavy table is supported on a pair of inclines, which run in gibbed ways on the base of the

machine, and operated at the feeding-in end by a hand wheel and two parallel screws mounted on ball bearings; at all times the points of support are directly underneath the feed rolls and the cutter head.

The feed mechanism consists of four 5-inch rolls, all driven downward by a system of gears used only on Fay & Egan machines; all gears are keyed to babbitted shafts, the use of studs, with their consequent evils, being entirely avoided. The in-feeding roll is controlled by spring pressure, and may be either solid or sectional. The sectional feed roll is unique in its interior construction. Each section is $1\frac{1}{2}$ inches thick, and drives independently, as if it were a separate roll. This feature is found an invaluable one when it is desired to plane, at the same time, a number of narrow strips of varying thickness.

The cylinder is tool steel and of small cross-section, two fea-



PLANING MACHINE FOR CABINET WORK.

tures essential to fine planing; the cutter head and journal are forged from the same piece. The patent sectional clamp bearings for the cylinder journals do away with the trouble of re-babbitting. The thin plates, which form the cap bearings, rest diagonally upon the upper surface of the journals and are clamped

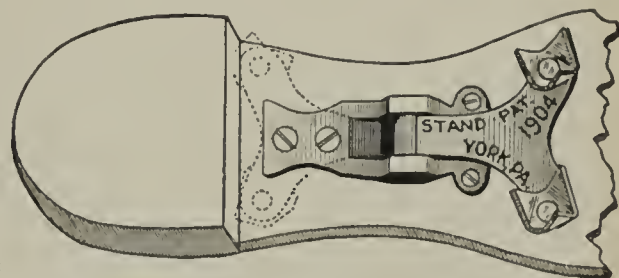
in place by bolts, as shown in the illustration. These plates take up their own wear, and any looseness of the journals may be taken up each day, if desired.

On either side of the cylinder are the pressure-bars, set close to the knives and rising concentric with them. On the lower edge of the front bar is a spring, extending from end to end, which rests upon the stock, instead of the bar proper, and which is strong enough in itself to press all ordinary crooks out of a board and hold it firmly upon the table.

The statement is made that the plant of the Fay & Egan Company is the largest in the world devoted to this particular industry. There are 1,200 workers employed by the company in the manufacture of hundreds of different styles and sizes of machines for working and cutting wood in every way, and adapted for the smallest blacksmith and wheelwright shops or the largest car shops and shipyards. The machinery of this company is used by many governments throughout the world, and in nearly every technical school of any importance in America. It has won high prizes wherever exhibited, from the Crystal Palace, London, 1851, to the St. Louis World's Fair in 1904. This firm was established in 1830, and is a combination of two companies: J. A. Fay & Co. and the Egan Company, each of which was a large and successful concern. Mr. Thomas P. Egan is president and acting manager of the consolidated company.

FOLDING ICE CREEPER.

The subject of creepers is especially timely at this season of the year, when the snow and ice of winter are about to descend upon us. The typical creeper, fastening as it does to the heel of the shoe, has the disadvantage of necessitating removal every time one enters the house or the teeth of the creepers will cut the carpets or rugs. The firm of McClellan & Gotwalt Company, of York, Pa., is placing a new notion of this character on the market. Instead of being secured to the heel, it is fastened to the sole of the shoe under the instep



and is hinged, so that when in use the contact points are under the ball of the foot, but when it is desired to throw them out of service, the points fold back toward the heel where it is entirely out of the way, and yet ready for use at an instant's notice. The parts are of brass with the exception of the points and spring, and therefore the implement is largely rust-proof.

Oriental Trains on American Railroad.—The management of the Great Northern Railroad, which runs from St. Paul, Minn., to Seattle, Wash., has decided to put some very luxurious trains in operation on that line. Eight new trains have been ordered and will be known as the "Oriental Limited." The decorations in these cars will be of Oriental design; Japanese porters, waiters and cooks will take the place of negroes on them. In the dining cars a specialty will be made of Japanese cooking, but American dishes will be served to those who prefer them.

DROPS EXTRA DUTY ON PULP.

James B. Reynolds, Assistant Secretary of the Treasury, has advised Collectors of the Ports of United States that the United States has concluded to drop its contention that an additional or countervailing duty should be levied on wood pulp, the product of pulp wood cut from Crown and private lands in the Province of Quebec.

The case is of considerable interest to manufacturers of wood pulp and paper, and has been in litigation for several years, the American Government insisting that it had the right to collect a countervailing duty on all wood pulp irrespective of whether the product came from wood cut on Crown or private lands. This contention was recently declared illegal by the United States Circuit Court for the Northern District of New York. The court affirmed an earlier decision of the Board of Appraisers, and held that the United States can only exact a countervailing duty on wood pulp produced from wood cut from Crown lands.

The Treasury Department has maintained that Canada pays a bounty on all wood pulp sent to this country, and that the merchandise thereby became liable to the extra duty on importation into the United States. While the test case has been under consideration many cases have arisen and been placed on the suspended files of the Board of Appraisers pending the outcome of the court proceedings. These will now be decided and large refunds made to importers.

PNEUMATIC ERASER.

The common method resorted to by typewriter operators of brushing away by the hand, the particles resulting from an erasure from the paper is objectionable for several reasons. When copying ink is made use of, the passage of the hand across the paper makes a smear, and in blowing away the accumulations, unless done with great care, one is liable to dot the page with blots of moisture. A combination rubber and blower has been invented by C. S. Magill, of Owensboro, Ky., to meet this purpose. An eraser of standard type is used in which a hole is bored. The eraser is fitted into a rubber bulb and serves as a nozzle of the syringe. In use the eraser is held with the bulb in the palm of the hand. After rubbing out the desired mark, the eraser is lifted a trifle from the paper so as not to close the air duct, then on squeezing the bulb the dust and dirt of the erasure will be blown away. When one eraser is used up it may be removed and another inserted in the bulb.

A CLEANSABLE NURSING BOTTLE.

The difficulty of keeping a nursing bottle thoroughly clean is a problem which has been struggled with by mothers, nurses and doctors for generations. All sorts of cleansing devices have been suggested and made, but because of the shape of the bottle generally used, the task has been a difficult one. The latest suggestion in this line is not a bottle, but a vessel much like an ordinary drinking glass. It is supplied with a flange around the upper edge, holding in place a rubber cap, which takes the place of the usual rubber nipple, and is of convenient shape for the infant's mouth. This idea is said to have a number of advantages over the old form, the principal one being that the bottle may be thoroughly cleaned, as all interior surfaces are accessible.

INDUSTRIAL NOTES.

The firm of Nathan H. Hirschberg & Sons of Baltimore has worked up a very extensive export business in its line, which consists of framed pictures, mirrors and moldings. This concern now has in the course of erection a new factory building, which, when completed, will be the largest of its kind in the United States. It will be equipped with the latest and most approved labor saving machinery and so as to reduce the cost of production to the lowest point.

An order for pneumatic riveting and reaming tools was received recently by the John F. Allen Company, of New York, from G. and O. Braniff, of Mexico City. A similar installation was recently shipped to the Cia. Consolidada de Construcciones Metalicas of the same city.

The Sterling Emery Wheel Company has been compelled to move from its old store at 65 South Canal Street, Chicago, Ill., because of a fire, and a location has been secured at Nos. 30 and 32 South Canal Street.

Five facts about energine, a new fuel for gas or steam automobiles, launches and engines, are set forth in an attractive manner in a booklet issued by the Energine Company of Cleveland, Ohio. The material referred to is said to be an improvement on gasoline, inasmuch as it develops from 40 to 80 per cent. more power and is devoid of many of the disadvantages of gasoline; for instance, it is said that the sparking troubles attendant upon the use of gasoline are eliminated. The compound is endorsed by many automobile enthusiasts.

The Pratt & Whitney Company has purchased a plant in Dundas, Ontario, for the manufacture of its line of small tools. The building is a modern structure. The new plant will also include a department for manufacturing a full line of twist drills, an elaborate equipment of special machinery having been prepared for the purpose.

CLEAVER AND MEAT TENDERER.

All the world cannot indulge itself in the tenderloin; some must be content with more undesirable parts of the beef, and make the best of it. That a process of pounding a piece of meat of the latter category greatly improves its eating qualities is an established fact, and in some kitchens where the juicy tenderloin



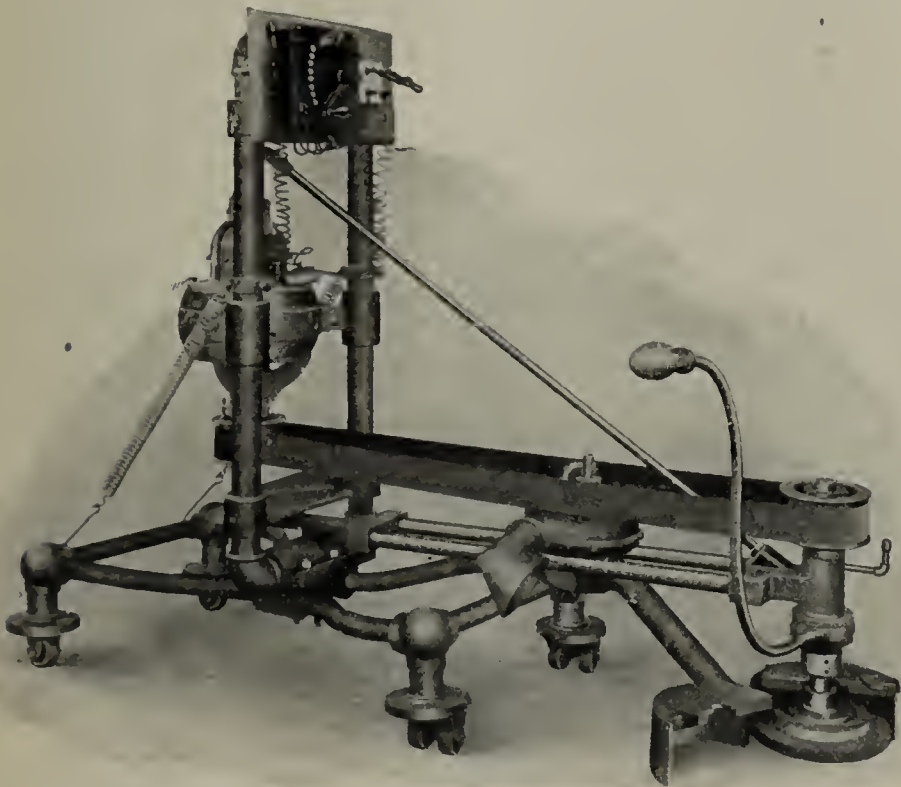
seldom finds its way, the meat is regularly subject to hammering, which breaks up the fibers and makes it readily attacked by the teeth.

One of the newest kitchen implements placed on the market is a family cleaver and tenderer, which is shown in the cut. The cleaver blade is 7½ by 3 inches, and at the point and back it is supplied with a toothed metal plate, which serves the purpose of breaking up the fibers of meat in an effectual and rapid manner. This cleaver is made by Ira F. White & Sons, of Newark, N. J.

FLOOR DRESSING BY MACHINE.

Because of its pleasing appearance and the sanitary advantages claimed for it, the hardwood floor has become very much in demand. The tedious work which has heretofore been necessary in the finishing of these floors has been a very considerable factor in the matter of determining the cost of laying a floor. The back-breaking task of scraping and rubbing the surface by hand is necessarily slow, and the services of many men were required when it was desired to perform the work rapidly. This has been changed recently by the introduction of a machine which is controlled by the Ransome Concrete Machinery Company, No. 11 Broadway, New York, by which the labor is reduced to a task of trifling proportions. This machine is said to be capable of doing not only more work, but of accomplishing superior results, and in a fraction of the time formerly accorded the expert mechanic, who got down on his knees and laboriously tackled the floor and did the best he could, considering the primitive methods at his disposal.

The machine which is shown in the accompanying cut is a one-man affair, runs on wheels and is as docile to guidance



FLOOR FINISHING MACHINE.

as a carpet sweeper. The surfacing, abrasive grinding or polishing disc is set with the precision of a cutter in a smoothing plane; the operator requires no other knowledge than to present all parts of the floor to the machine, thus producing a level surface absolutely unattainable under the old system of hand work. A suction pipe in close proximity to the revolving disc absorbs all litter, depositing the same in a housed receptacle on the machine. In other words, when the floor is finished and the machine pushed out of the door, it leaves a clean room and a glassy-smooth floor without any of the imperfections that invariably accompany hand work.

By substituting special surfacing and polishing discs, the machine is equally successful in renovating all kinds of floors, such as marble, concrete, tile, mosaic, terrazzo mosaic, etc.; and, again, a scrubbing brush is placed in the socket, which does more and cleaner scrubbing than can be done by hand.

TO IMPROVE THE CONSULAR SERVICE.

When the United States consular service was established the Government could not have foreseen the enormous development in our foreign commerce which lay in the future. The arrangements then made doubtless seemed at the time entirely adequate. With our increased output and improved facilities for transportation, however, and the unlooked-for growth in our foreign trade, it is generally admitted by all who have investigated the subject that there is now a crying need for amplification and improvement in this branch of the Government service.

The present unsatisfactory condition of affairs is due not so much to the men who constitute the consular and diplomatic corps as to the fact that Congress does not sufficiently remunerate our representatives abroad or provide proper facilities for the efficient transaction of consular business. Trained men, taking up the work as a career, are the only ones who should represent abroad the great foreign trade interests of the United States.

Secretary of War Taft and the Congressional delegation which this year accompanied him to the Philippines, China and Japan, had an opportunity to study present conditions in the Orient and to compare our consular standing with that of other nations. It is understood that with the knowledge of the situation gained by the senators and representatives, Congress will probably at its session this winter look into these matters with a view to remedying the defects that exist. Secretary Taft as a result of his keen observation will undoubtedly recommend many improvements in the consular service, and it is hoped that our prestige as a commercial nation will not continue to suffer in foreign countries by comparison with the generous arrangements of other governments for their consular representatives. With both the cabinet and Congress supplied with the latest information on the subject, gleaned by thoughtful men who formed this commission, the outlook for an improvement in the conditions is decidedly hopeful.

It is announced, too, that President Roosevelt has decided to meet these issues, and that he has proposed changes which, among other improvements, contemplate a general increase in the salaries paid to consuls, and also of appropriations for the maintenance of more suitable consular and diplomatic quarters in many of the foreign countries. The effort to improve the personnel of this great body and to widen the opportunities of those already engaged in the consular service cannot but have a healthful influence on the prosperity of the country in general and meet with hearty approval. Money spent in this direction must prove a good national investment.

Fish Cleaned by Machinery.—In Seattle, Wash., is a fish cannery where 30,000 fish have been canned daily during the present season. Fish canned there are cleaned by a machine which is a highly ingenious piece of mechanism. It scales and cleans the fish and also cuts off the heads and fins and washes the body ready for the cans. From that machine they slide down a chute, where they are caught by another cleverly arranged mechanism that cuts them into pieces that just fit the cans. Another machine puts the pieces in the cans, and by means of an endless chain they are passed along to where the cans are automatically covered and soldered. From the time the fish is put in the cleaning machine it is never touched by hand. The use of machines insures perfect cleanliness.

FRENCH FEAR OF AMERICAN COMPETITION

In recent issues of the *AMERICAN EXPORTER* there have appeared articles calling attention to the vast strides made by the American automobiles in the countries of the world. Figures were shown by which it is apparent that the American automobiles had made very successful inroads in Europe, particularly in France, where it was regarded the best automobiles were built. This condition of affairs is just now being appreciated by the Frenchmen themselves, and the American motor car is regarded by them with alarm. As is well known, the French nation has held first place in this industry for years, and the fact that American machines are being sold to native enthusiasts is a matter which is giving the French considerable concern.

While they insist that their motor cars are constructed on superior lines of beauty, they are bound to acknowledge that the utility and economy of the American car are strong features. While the French cars are listed at 15,000 francs, an American car to answer the same purpose can be secured at one-third of the amount. In a recent French newspaper publication commenting on this fact, a statement is made that a call has been issued addressed to the French manufacturers, to take part in a meeting to discuss this phase of the American invasion of Europe. An effort will be made not only to secure the interest of the manufacturers, but well-known automobile owners and experts from every part of France, and is hoped to devise some means to throttle American competition.

The publication referred to continues as follows:

"Is it any wonder, then, that the automobile factories should grow in that country, and that they should have made in 1904 10,000 more machines than ourselves? At the Chicago show two French machines were shown; all the others, out of 350, were American made.

"Our manufacturers make the mistake of catering too much for the richest trade and thus restrict their own market. Not only do we seem to despise the cheaper machines, but, further, we do not seem to want to hear anything of the commercial vehicle. In London several omnibus lines are running with the greatest success, and in every industrial town in Great Britain a number of industrial motor vehicles are to be found, while we have only a few solitary samples running in Paris.

"The taxes are a heavy burden; a mere 14-horse-power car, which is a very reasonable power, pays 320 francs (\$64), in Paris. Considering that cars are frequently sold and bought second-hand, and that the new owner has to pay the tax again for every month of the year, it happens that in twelve months as much as four or five times the legal yearly tax has been paid on the same car.

"Passing to other conditions, gasoline costs 12 cents a litre in Paris, while it costs 23/5 cents in Brussels, and hardly anything in America. It will be necessary for a congress to determine the best way of altering these conditions and bringing about others which may be found necessary to the industry. It will also be necessary to find openings for our output. In the United States the manufacturing facilities appear to be not over 20,000 cars a year, while the demand is for 30,000."

Tin in Alaska.—General interest has been evinced in the discovery of tin in Alaska. Specimens of ore containing more than 70 per cent of tin have been shown.

AN INTERESTING REVOLVING DERRICK.

In the erection of a large gasometer at Milwaukee by the Riter-Conley Manufacturing Company, of Pittsburg, Pa., this company has resorted to the use of a special revolving steel derrick of very large dimensions and unusual pattern, traveling around the inner circumference of the big tank and commanding all portions of the steelwork. While this tank is not the largest, it occupies a place in the fore, in point of capacity. Its size can be appreciated by the accompanying cut. The derrick is also shown, which is the most interesting feature of the construction of the



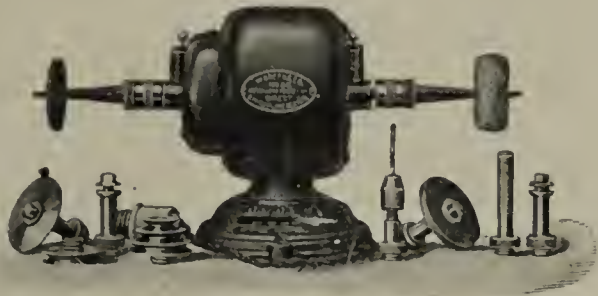
GAS TANK SHOWING REVOLVING DERRICK.

gasometer. The heavy members of the framework are swung into position and assembled by means of this derrick. This has a pair of tall, light shear legs 145 feet high, which are hinged at the base to the outer end of a horizontal radial arm supported at the opposite end on a tower, to which it is pivoted in the center of the tank, 70 feet above its bottom. The shear legs are of rectangular cross section, made with four corner angles, latticed on all sides, and are tapered from the middle toward each end. They are cross-braced by tension rods in several panels, formed by horizontal struts, and are maintained at right angle from the perpendicular by steel cables from the head of the pivot. This angle may be varied to adjust the inclination. The legs do not act ordinarily as shears, but serve rather for the support of a wooden boom seated on a cross-beam near the upper end.

American Bamboo.—According to a San Francisco dispatch the Japanese firm of M. Furuya & Co., of Seattle, Wash., is engaged in conducting an experiment in bamboo culture in this country. A large tract of land on Bainbridge Island has been leased and planted with bamboo, which seems to be thriving. A great deal of bamboo is sent to the United States, and this effort to grow it on the Pacific Coast is an important move.

MOTORS FOR THE WATCHMAKER.

The economy and convenience of the individual electrical motor for many purposes are receiving world-wide recognition. In the equipment of the modern shop it is now the approved custom to operate all machinery as far as possible with the individual drive, or at least to arrange small machines in groups around an electric motor. In the workshop of the watchmaker and silversmith, the motor is particularly desirable for the reason that great speed is available for buffing and polishing and similar operations. There



FOR POLISHING AND BUFFING.

are shown herewith the latest improvements in the line of motors designed for the uses of silversmiths, jewelers, opticians and dentists, the product of W. Green & Co., No. 6 Maiden lane, New York. These machines are notable for their handiness and compactness, and the manufacturers claim that they really represent a number of pieces of machinery combined in one. Two models are shown herewith which are dust-proof and moisture-proof. The chucks are held by an instantaneously adjustable lock. The speed, ranging from 500 to 3,000 revolutions per minutes, is controlled by the regulation of the intensity of the current



MOTOR FOR WATCHMAKERS.

through the aid of a switch handle. The bearings are of hard-drawn phosphor-bronze, and the shafts are of crucible steel. The armatures are of the drum type, suitably wound for efficient service. Five interchangeable chucks are supplied with these motors, which are sufficient to meet all contingencies.

The motor known as type No. 4, one of those shown, has four speeds and is of one-fifth horse-power, direct current. The illustration shows brush and buffing wheels on spindles in position. Its net weight is 30 pounds, gross 36 pounds, total length 18 inches and height 8½ inches. The motors are operated by a socket and plug attachment to the lighting circuit.

A TALK ABOUT GREASE AS A LUBRICANT.

In reply to a query, "Why animal grease might be regarded as superior to mineral grease for general lubricating purposes?" we are in receipt of the following communication from Adam Cook's Sons, No. 313 West street, New York, N. Y., U. S. A.:

Albany Grease, for the reason that it is a purely animal grease, free from all destructive acids, will lubricate and preserve the bearings of machinery better than any of the so-called mineral greases on the market to-day, as it has done for nearly forty years. Having comparatively low melting points for the different consistencies, it will more readily melt, and thus lubricate, cool and preserve a bearing, which from carelessness, inattention or the improper placing or setting of cups would otherwise burn or cut out and be practically destroyed by the use of mineral greases with high melting points. Take, for instance, a mineral grease with a melting point of 300 degrees (and most of those on the market to-day range in that neighborhood, with some running as high as 600 degrees) and place it in open box bearing caps; the usual result is that the bearing will get hot, almost to the melting point of the grease before it will flow over the bearing and lubricate it. This is getting pretty close to the danger point for babbitted bearings, and if the heating be long continued will destroy them. Besides, if a bearing should be neglected for a short time and not supplied with grease, a burned out bearing or a fire will be the inevitable result. Under the same circumstances, No. XXX Albany Grease, which is of the hardest consistency made, with the highest melting point, 175 degrees, would melt and flow over the bearing, lubricating and cooling it, on account of its peculiar properties, long before the heat of the bearing had reached the danger point. Mineral greases, to be used with any degree of satisfaction, and by that we mean cool bearings, must be used in compression cups of either the spring or hand type. They cannot be used with good results in spindle cups. On the contrary, Albany Grease will give the best results and the greatest economy when used in spindle cups, and on any speed, and when the simple precautions advised are observed. When used in those cups the bearings are cool, the copper feed wire in the spindle cup only getting warm through its contact with the shaft, and by this means melting only as much grease as is necessary to lubricate the bearing, thus keeping it cool. Mineral greases cannot be used, because their melting points are too high. Albany Grease can be used in any style of grease cup on the market to-day with better results than mineral greases, because so much less of it is required to do the same work, keeping the bearings cool at the same time, hence the economy. The moral is plain. Use Albany Grease and obtain the best and most economical results in everything pertaining to the lubrication of machinery.

Traffic of the Big Bridges.—New York's big bridges are always a source of interest to our foreign friends, who may read with interest the following figures concerning the traffic and profits of these structures: Although receipts collected by the Department of Bridges on the Williamsburg Bridge for the second quarter of the present year were only \$30,077.74, the net profit to the city from that traffic was \$16,162, or only \$1,775 less than the net profit realized from the traffic on Brooklyn Bridge, where the receipts reached \$123,173.47 for the same period and gave a net profit of \$17,837. This is explained by the fact that the expense for repairs on the Brooklyn Bridge is very great, while that on the Williamsburg structure is very small, being new. An average of 385,265 persons a day crossed Brooklyn Bridge during April, May and June, of whom 156,639 traveled in surface cars and 194,406 in elevated trains.

NEWEST AMERICAN INVENTIONS.

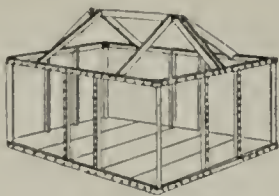
WATCH WITH TWO CHAINS.

A new and novel watch attachment was recently patented in the United States by Arthur Fishman, of New York, the objects of which are to provide means for preventing the removal of a watch or similar object from the wearer's pocket, at the same time permitting the watch to be removed sufficiently for the use of the wearer in observing the time without the necessity of manipulating any fastening devices or disengaging any hooks or the like. The invention consists of a ring of thin metal, designed to be secured around the edge of the watch and fastened in place. The lower part of the ring is supplied with the means of securing a small chain and safety pin to it, so that the timepiece may be secured to the garment. The chain is of sufficient length to permit the removal of the watch for the purpose of ascertaining the time, but would effectually frustrate the efforts of anyone to feloniously remove the watch.



COTTAGE AND TENT COMBINED.

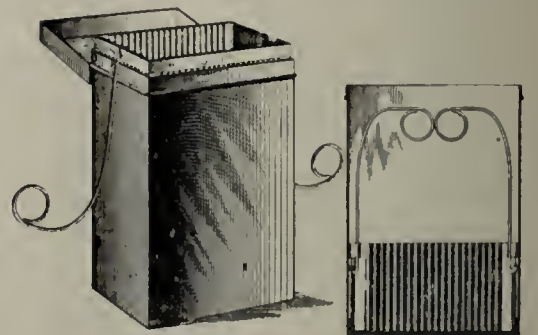
A combination of a cottage and a tent comprises the subject of a patent recently granted to Henry W. Stroud, of Cleveland, Ohio. The improvement represents one of those types of portable houses which are largely resorted to where a temporary structure is desired with more comfort than is to be found in a tent. The cottage-tent consists of a combination of the wooden framework, such as might be used for a small house with the tent covering, but the woodwork comprising the frame is fitted together in such a manner that the operation of erecting the structure or taking it down is quite a simple one. The timbers are secured to a floor supported some little distance above the ground. The framework is covered with canvas, and this arrangement makes a very desirable cottage-tent, affording the space offered by a frame structure and the portability of one of fabric. It will of course be understood that these cottage-tents are designed to be used for summer purposes by campers and others who desire to take an outing for a month or longer. They are also designed, however, to be used for more or less permanent occupancy the year round in suitable latitudes where artificial warmth



is not much in need, or in cases where people desire to take as much of the open air as possible under shelter for health, as in the case of consumptives. The cottage-tent as thus shown and described is susceptible of various changes and modifications to promote comfort and convenience. It might, for example, have an inside canvas or other suitable lining, so as to provide an inner wall separate from the outer wall and leaving an air space between them for greater comfort in cool climates.

PHOTOGRAPHIC DEVELOPING BOX.

The manipulation of photographic plates and films has been greatly simplified since the art has become such a popular one. In the efforts to make their product extremely available, the several camera manufacturing companies of the United States have cut all the various processes of treating plates and prints down to a point representing the very minimum of labor. Formerly it was essential to lock oneself up in a dark room or a closet when loading the plates into the holder, and also during their subsequent treatment after exposure in the camera. This was greatly simplified by the use of films which were introduced with a protecting backing of black paper, permitting the loading of the camera in daylight. This greatly extended the use of the camera. Business was increased to such an extent that it was found profitable to further simplify the photographic process. Another notable step in the advance was the introduction of the developing machine. This simple contrivance made the dark room entirely unnecessary for the purposes of the amateur. These improvements, however, contemplated only the use of the film, but it was subsequently discovered that the principle of the developing machine could be applied to the plates by using a very weak developer. A number of plates immersed in this dilute solution, and allowed to stand, will be acted upon by the chemicals thoroughly without danger of over-development. A new tank for this character of development is shown in the accompanying cut, the invention of Gustav C. Gennert, of New York. This tank contains a tray which is especially fitted for the examination of the plates, as may be necessary from time to time. The handles shown are for the purpose of raising the tray and plates from the solution. While this greatly simplifies the work of development it does not in this instance do away with the use of the dark room, as the sensitive plates must be protected from the action of the light while undergoing treatment.



CARTRIDGE OF ICE CREAM.

The method of packing paints, both oil and water color, glycerine, tooth paste and other toilet preparations in collapsible tubes has been resorted to quite generally by manufacturers all over the world, but the most novel use for which



these tubes have ever been suggested is that of utilizing them as a means of handling and shipping ice cream. This process has been made the subject of a patent granted by the United States Patent Office to Samuel Lustig, of Paterson, N. J. The inventor makes these tubes, or cartridges,

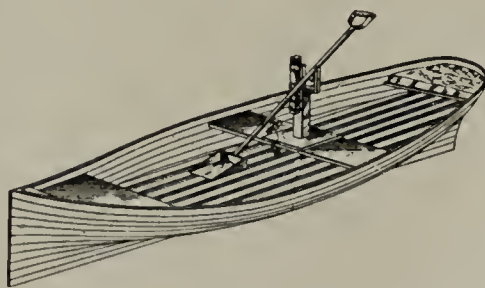
as he prefers to call them, of some suitable material, such as heavy tinfoil, gelatine or sheet lead, provision being made in the latter instance for protecting the interior surface of the tube with paper or a coating of some harmless preparation to prevent any dangerous chemical action taking place between the contents and the cover.

When the cartridges are prepared for filling, the top is left open, and in this manner the tube is filled with ice cream, water ice, or some similar cold refreshment, after which a temporary top or lid is placed over the mouth. The tubes are refrigerated and the contents frozen hard. In this manner it is possible to keep the contents of the tubes hard for a great length of time. With reasonable protection they can be sent great distances and even carried about in the pocket. When it is desired to indulge oneself, the top is removed and the heat of the hands will soon soften the ice cream sufficiently to the extent that it may be readily forced out for consumption.

BOAT-BAILING DEVICE.

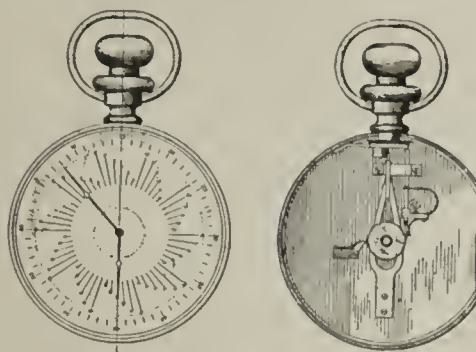
The invention shown in the accompanying cut relates to improvements in devices for bailing water caused by rain, waves, or the like, from small boats, such as rowboats, the object being to provide a device for this purpose that will be simple in construction, that may be removably attached to a boat and conveniently operated.

The usual process of removing the water from a boat is a back-breaking operation, which is also slow and tedious. To perform this disagreeable task with rapidity and ease is the object of the invention. It is described as follows: Removably attached to the thwart of the boat by means of a swinging clamp is a plate from which a post stands upward, and adjustable vertically on this post is another supplemental post. The latter is movable through guide straps, and is supplied on one end with a handle, while the other end has a scoop, which may be arranged at any desired angle with relation to the bottom of the boat. In operation the scoop is dipped into the water deposited in the boat, then raised and turned laterally to discharge the water from the scoop over the side of the boat.



POCKET CASH REGISTER.

In keeping a record of expense or other accounts by traveling salesmen or others, it is exceedingly convenient to have a register or recording device capable of being carried in the pocket and whereon may be registered and recorded not



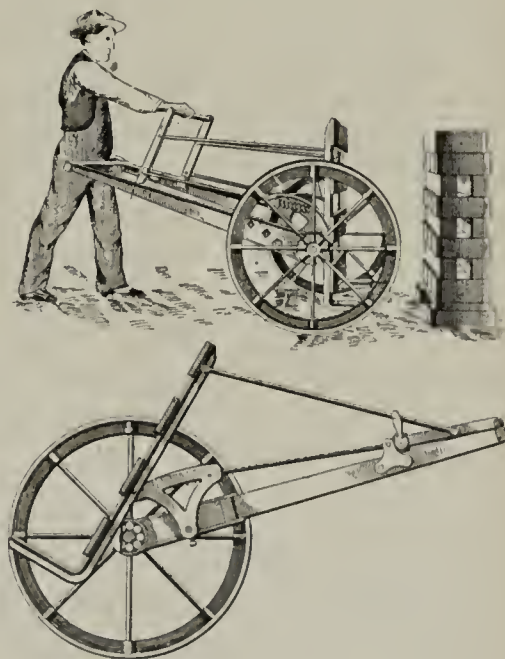
only the amounts expended, but also the purposes for which the expenditures are made—that is, it is frequently desirable to keep a record of the items of the expense account. It frequently happens that a traveling salesman or

other person keeping an expense account dislikes when in the presence of others to be seen entering items of expense on his book. A pocket device, by which such records can be made without attracting undue attention, is shown herewith, the invention of Adolph G. Carlson, of Chicago, Ill. This is of the shape and size of a watch, and carries in its interior a type-bearing wheel. This disk is controlled by the operation of the burrs on the stem, by the manipulation of which impressions may be made on a disk of paper also inside the case. Opposite each amount on this sheet will appear some brief memorandum, indicating the purpose for which the expenditure was made, such as "H" for hotel bill, "CF" carfare, "R.R." railroad. The device is exceedingly simple and easy to operate, and is said to be entirely sufficient for the purposes for which it is designed.

BRICK-CARRYING TRUCK.

An improvement in brick-carrying trucks is shown in the accompanying cuts, the invention of Clarence M. Steel, of Statesville, N. C. The illustrations fully explain the construction and operation of the new apparatus. The upper view shows the truck being pushed up against a pile of bricks.

The rack having been placed properly under and beside the pile, it is tilted by means of the hand lever shown, which raises the rack with its load and at the same time holds it at an angle which precludes the possibility of the load being dislodged while passing over inequalities in the surface of the ground. A notable feature of this truck is that it includes interchangeable frames, one for handling portable hacks and the other for handling pallets in racks.



With the end of the year 1907 the port of Hamburg will have the largest dry dock in the world. It is to have a lifting power of 35,500 tons; the largest dock, at present, lifts 17,500 tons.

NEWS OF THE EXPORT TRADE.

American Bottle for President Zelaya.—A noble specimen of American glass blowing was recently forwarded to President Zelaya of Nicaragua. It was a great liquor flask, 3 feet high, and containing seven compartments, each with a capacity of 1 quart. As shipped the bottle contained claret, bourbon, Scotch and rye whiskey and three cordials. The flask was made at the works of the Pittsburg Plate Glass Company, and was sent to President Zelaya by James Dietrick, a director of a company which has obtained some railroad and mining concessions in that country.

American-Built Yachts for Foreign Waters.—As an indication of the esteem in which American naval architecture is held abroad, several foreign orders have been recently received by Henry J. Gielow, of New York, N. Y. Plans and specifications were recently completed by him for a steam cruising launch of steel, 54 feet over all. Work has already been commenced on this craft. The same gentleman has also completed the plans for a 30-foot motor boat for John Revilliod, Astana, Nyon, Switzerland. Among the recent orders received by Mr. Gielow was one for the plans and specifications for a combination racing and cruising sloop having a length of 42 feet 9 inches over all, for a Finnish yachtsman, who will have the craft built in Finland.

New Atlantic Cable.—A dispatch from Canso, Nova Scotia, announced the completion during the past month of the Commercial Company's new cable. The signalling speed of the new cable is 15 per cent. greater than the other Atlantic cables of similar length. Its cost varied from \$1,000 to \$6,000 per mile. The greatest depth reached is 2,500 fathoms.

Prospects in the Orient.—Upon his return to the United States from the Orient, E. H. Harriman said that the prospects for American trade there were extremely bright. He said that China was undoubtedly learning from Japan, and that if it is possible for the people to work together as do the Japs, Chinese development will undoubtedly be phenomenal and rapid. Corea, in his opinion, is still a question, but its destiny will be worked out with Japan's aid.

Water Wheel Installation for Japan.—The Pelton Water Wheel Company, of New York, N. Y., and San Francisco, Cal., is about to ship a 300 horse-power unit to Tokio, Japan, upon order of Takata & Co. The same company has closed an important contract with the Oro Water, Light and Power Company, of Oroville, Cal. This covers two complete Pelton units of 2,000 horse-power capacity each, direct connected to electric generators. The water wheel arrangement embraces the "double overhung" type of construction, which is typical of Pelton apparatus, especially in connection with engine type generators, forming a compact and self-contained unit. Other recent orders of this company include a triple Pelton equipment for direct connection to heavy pulp grinders at the mills of the Crown Columbia Paper and Pulp Company, of Washington. On account of increased business great extensions of the San Francisco shops of the Pelton Company are under way.

Time Recorders by the Carload.—Foreign employers are fast becoming converted to the use of time recorders for the purpose of securing record of the arrival and departure of employees, and also for use in the cost-keeping department in obtaining information as to the exact time consumed on different pieces of work. This is indicated by the recent shipment of two carloads of these instruments by the International Time Recording Company, of Binghamton, N. Y., to foreign agents.

Representative of Menelik.—Eli Hadji Abdullah Aly Sadik Pasha, Hakel of Harrar, the representative of King Menelik, has been visiting this country with his suite. He was the bearer of a letter to President Roosevelt, which was duly presented. The object of the visit was to make observation of the business conditions existing here with the thought of applying the knowledge to the development of the commercial relations between this country and Abyssinia.

Subsidy for Steamship Line.—A state subsidy of \$80,000 a year has been offered by the Chilean government for the operation of a steamship line between Talcahuano and Punta Arenas. The boats must be capable of carrying 2,000 tons of freight, with accommodations for first and third class passengers, and must be capable of a speed of twelve nautical miles per hour.

To Promote Uruguay's Manufactures.—The Union Industrial Uruguay is an association established at Montevideo, Uruguay, with the sanction of the government, for the purpose of promoting the manufacturing industries of that country, and it is stated that the organization will act as the representative of the government in dealing with all industrial affairs that may have relation to the Custom-House revenue. The offices are located in the central part of the city, where there are commodious accommodations for housing a library and reading-room, and is designed here to accumulate catalogues and literary matter which may be of interest in the extension of the country's industrial affairs.

New Customs Ruling on Tobacco.—James B. Reynolds, Assistant Secretary of the Treasury, announced a new classification on October 23 in the matter of invoices of tobacco imports, affecting principally the trade with Cuba. Hereafter, shippers will be required to state in the invoices whether the bale is exclusively wrapper or filler, and if a mixture the invoice must state "mixed," which will be notice to United States customs officers to open the bale and determine the proportions of wrapper and filler. The new classification became necessary because of the trouble growing out of the former rule, which left to the shipper to state in his invoice the proportions of wrapper with filler in mixed bales. The duty on the former is \$1.85 per pound and on the latter 35 cents.

Harbor Improvements Under Way.—Harbor improvements are projected as follows: At Oran, Algeria, to cost \$3,450,000; at Antwerp, Belgium, to cost \$3,600,000; at Blankenberghe, Belgium, to cost \$130,000; at Lisbon, Portugal, to cost \$180,000 and Tripoli, where extensive works have been decided upon, but their full extent has not yet been determined upon.



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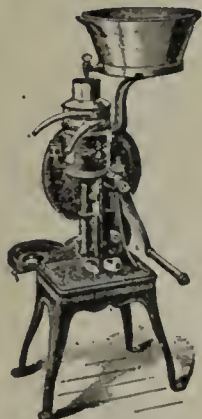
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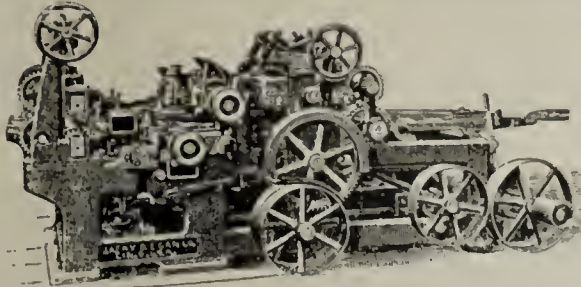
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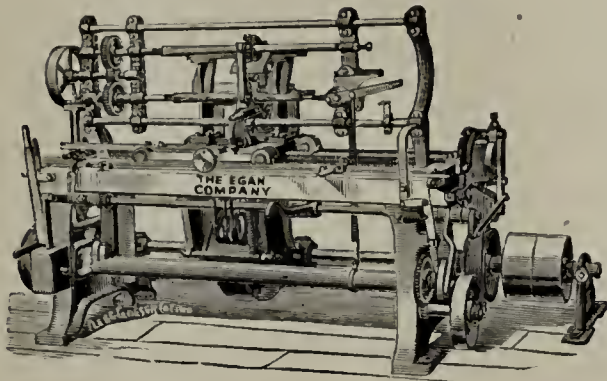
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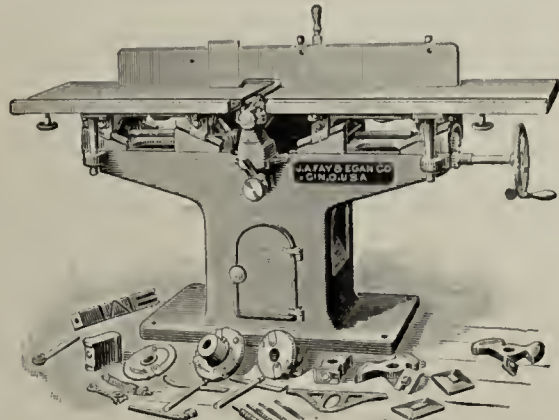


No. 129.—Planer, Matcher and Floorer. 30x8 inches.

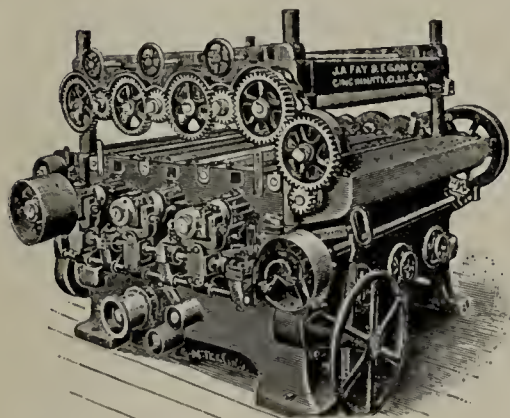
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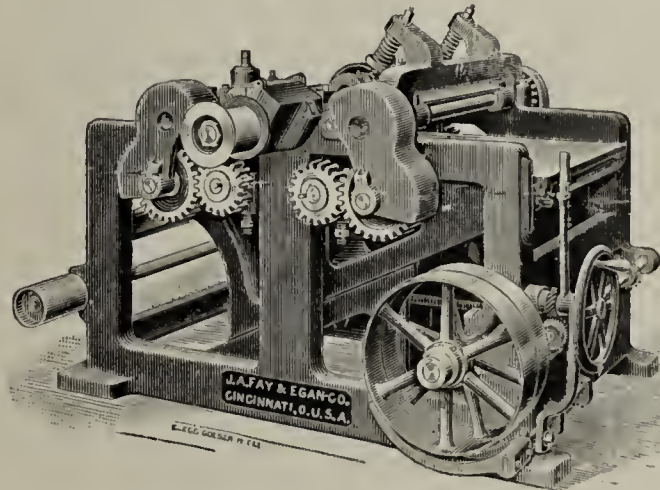
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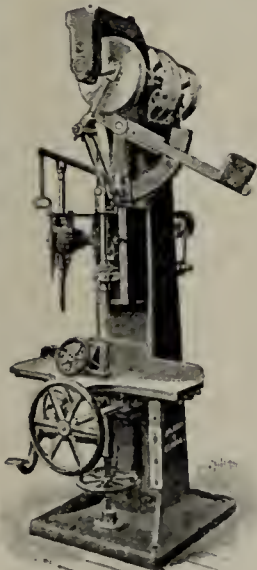
No. 62.—Universal Wood-Worker. Boring side at back.



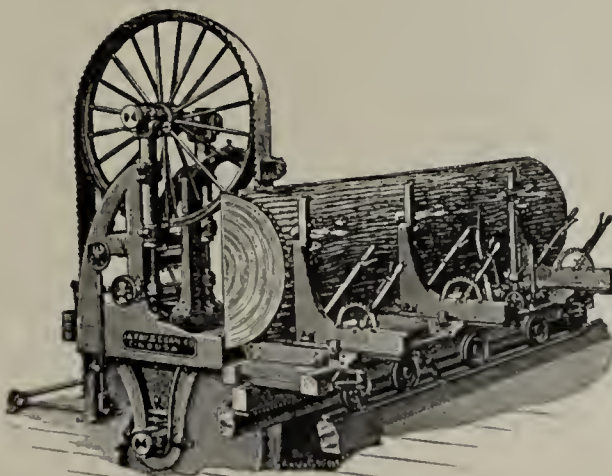
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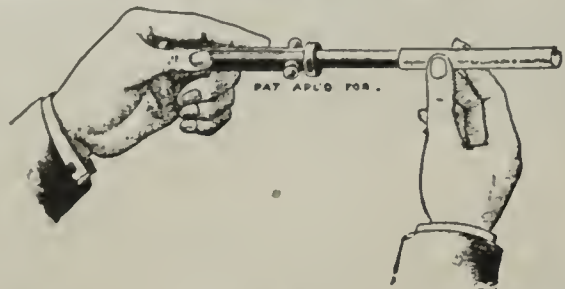
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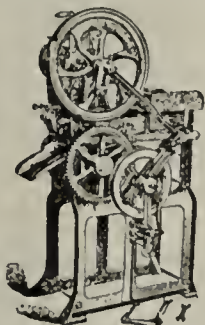
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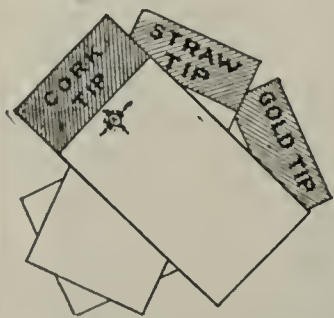
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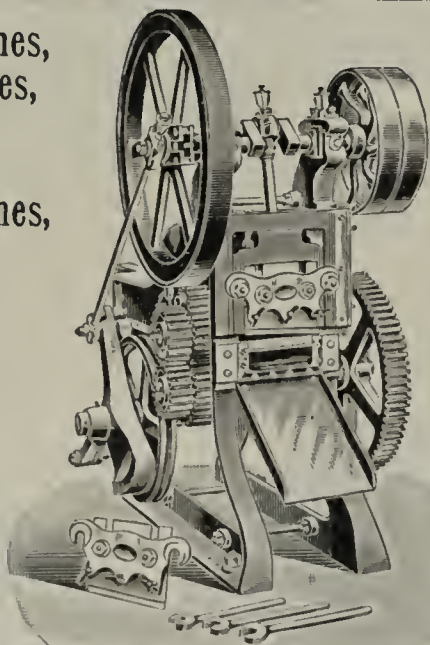
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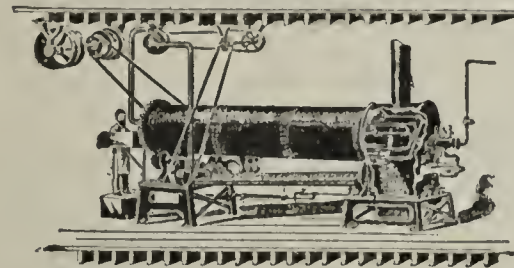
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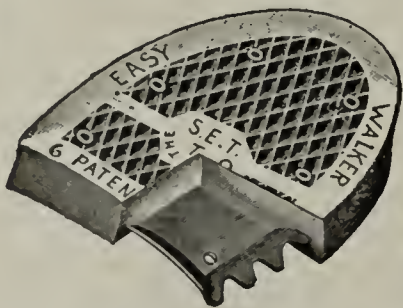
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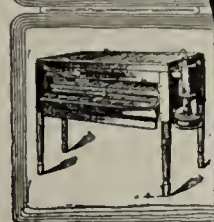
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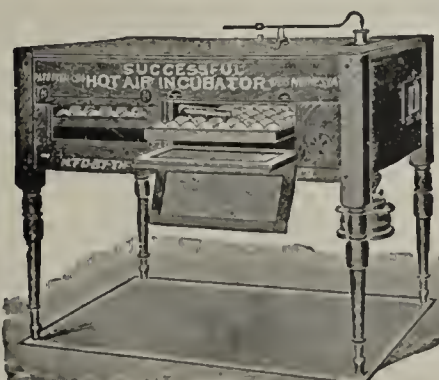


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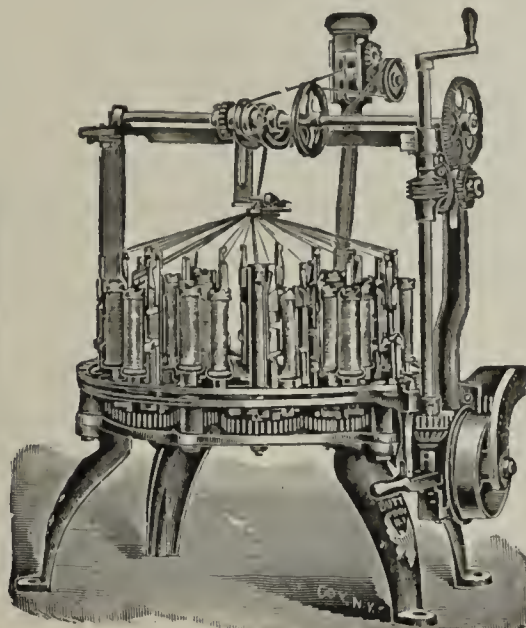
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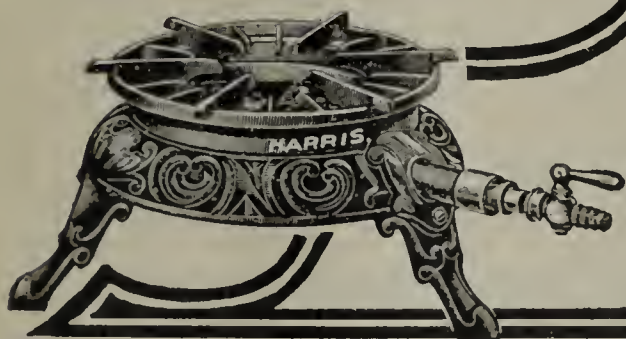
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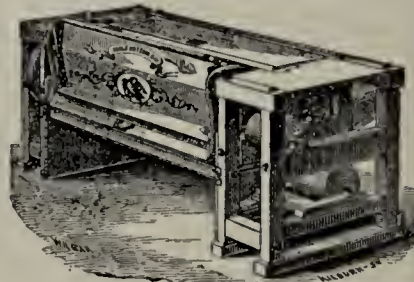


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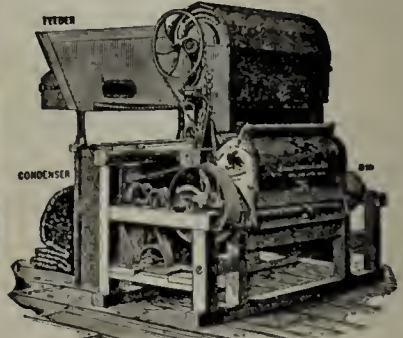
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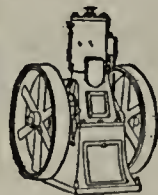
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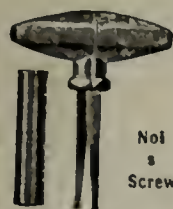


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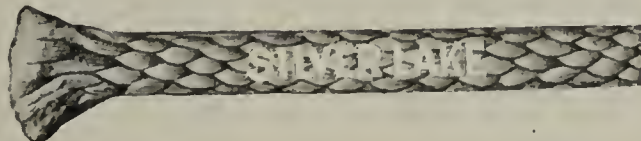
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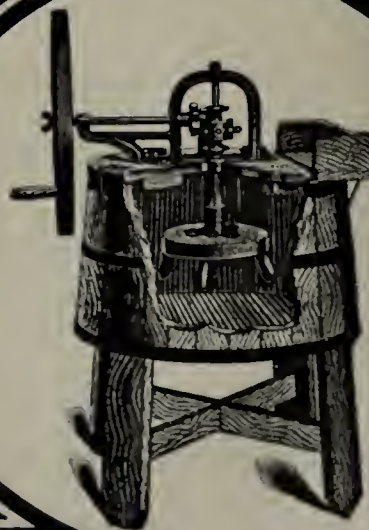
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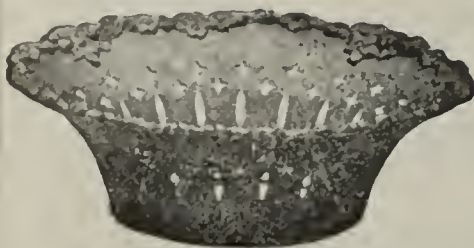
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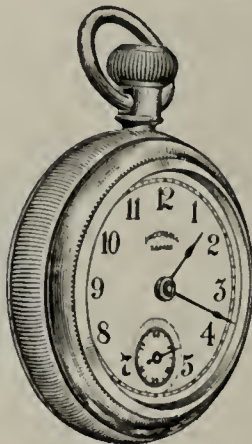
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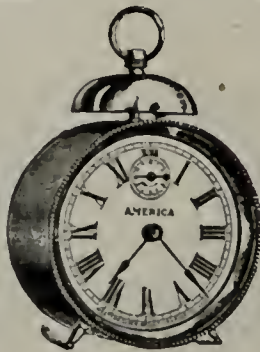
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NOTE.—The strength of our 1-5 Horse Power Motors are the equal of most of the ¼ horse power motors of other makes on the market. We do not overrate the output of our motors. Each motor an entire workshop in itself. Cost to run, 1 to 5c. per day.

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All chucks ADJUSTABLE and interchangeable.

"Our motors have no equal at any price."

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Two Chucks with tapered thread for holding the brushes and buffing wheels, and three other chucks for holding grindstones and polishing wheels of various sizes, which meet the needs of average work.

Our No. 20 Motor includes Starting Box and Regulator attached to motor, two spindles for holding polishing and buffing wheels, one grindstone, chuck, plug, cord and socket.

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Voltage	Horse Power	Direct-Current Motors		Alternating-Current Motors	
		No.	Price	No.	Price
52 to 110	1-6	20	\$26.50
115 to 250	1-6	20	29.00
52 to 110	1-5	4	33.50	5	\$46.50
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Separate and Extra Attachments for Nos. 4, 5 and 20 Motors

Adjustable Drill (or Burr) on Chuck.....	Price, \$3.00
Sandpaper (or Emery) on Chuck.....	1.50
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Typewriter Desks,
Filing Cabinets,
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No. A20.—50 inches long; 30 inches wide; 48 inches high. Weight, 230 pounds.

A modern, neat and practical desk. Quarter-sawn white oak front. Drawers have moulded fronts, carved wood pulls. Center drawer with flat-keyed lock. 14 pigeon-hole boxes with quartered-oak fronts and bronze label-holder pulls. Closed paneled back.

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Can furnish drawers both sides if desired. Finish—Fine gloss finish, golden oak.

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AND

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THAT'S ALL
WE CLAIM

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Our patented knock-down device makes it easy to set up our desks in 10 minutes.



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Made of honest material, perfect cabinet work and excellent finish. Always give satisfaction to the user. Largest assortment.

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Desk shown is massive and elegant; hand carved, rubbed and polished finish; double raised and moulded; cross panels on ends and back and inside of pedestals; full base moulding; metal drawer pulls on mahogany; cut-away drawer sides; drawer bottoms

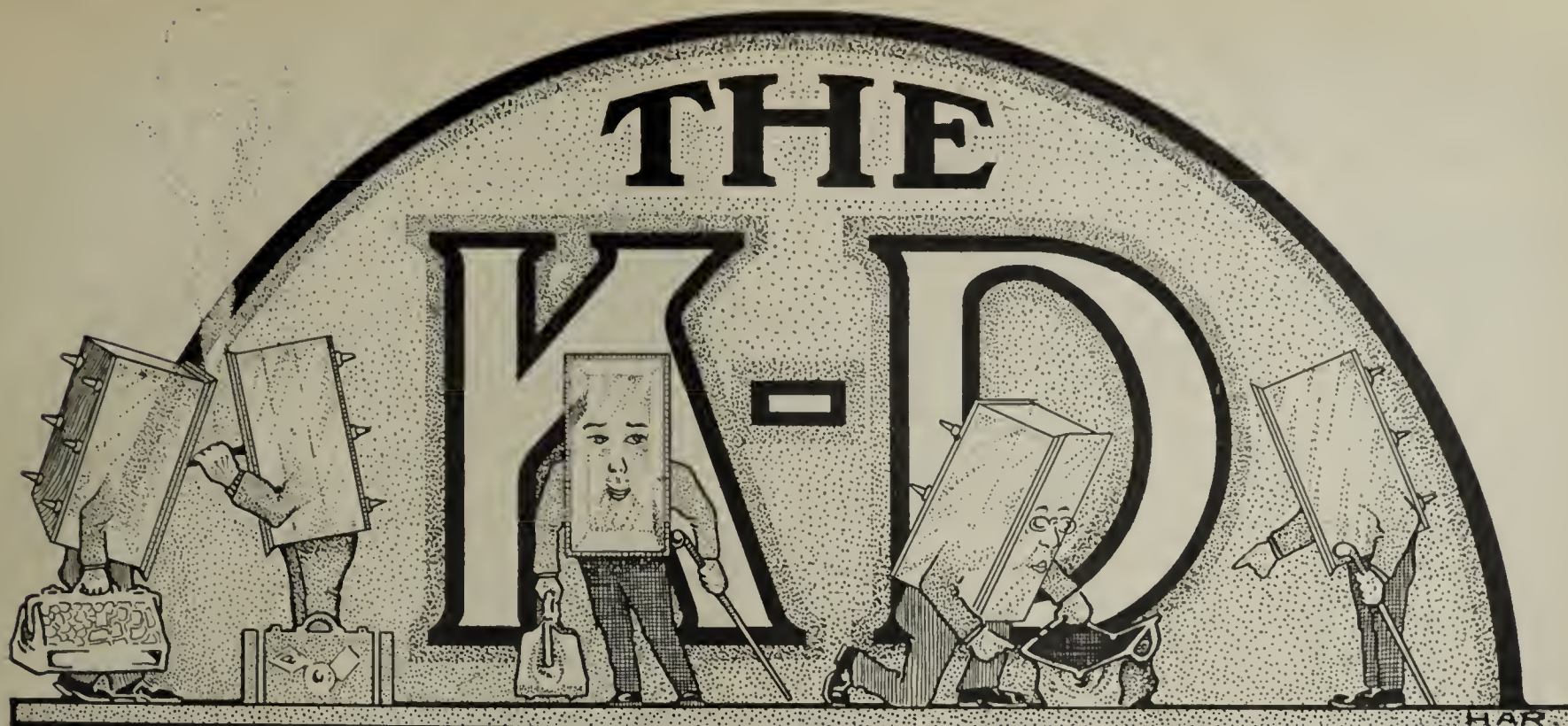
bird's-eye maple; writing bed 5-ply built-up stock, framed; extension slides 3-ply built-up stock, framed in; "Gunn" patent drop-away-front pigeon-hole boxes; letter files; two card index drawers; 72 inches long; 38 inches deep; 52 inches high; shipping weight, 600 pounds. Quartered oak, \$220.00; Mahogany, \$285.00.

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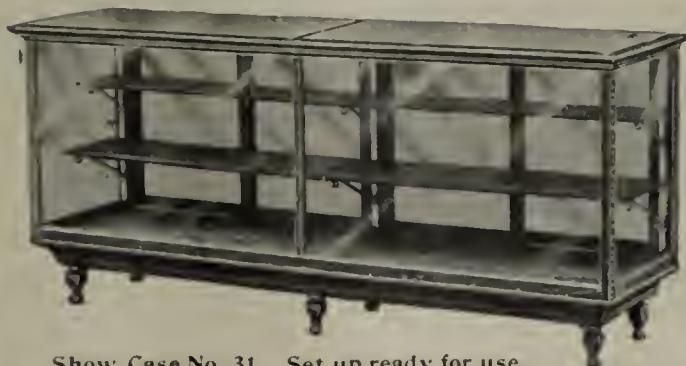
Show Case No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods—in fact, is well adapted for the display of any line of goods.

Show Case No. 31 "set up" (ready for use) is 8 feet long, 42 inches high, and 26 inches wide. Has six oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double-strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

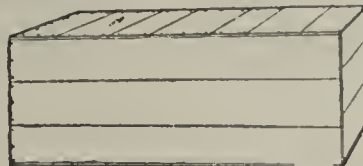
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Upon receipt of \$42.00 in U. S. Gold (or its equivalent) we will box, ready for transportation abroad, and deliver F. O. B. New York City, *one of our No. 31 Show Cases as shown*. Net weight, 248 pounds; gross weight, 384 pounds. K. D. for export measures 28 cubic feet.

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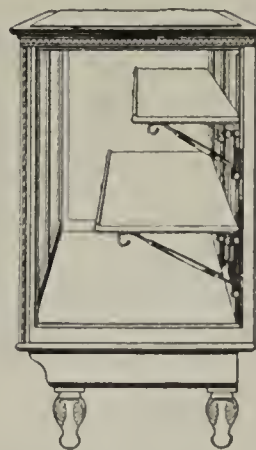


Show Case No. 31. Set up ready for use,



8-Foot No. 31 Show Case.

Showing end view of an 8 ft. No. 31 Show Case set up for use, and an end view of the same case knocked down and boxed for shipment. Weight, 384 lbs. gross; 248 lbs. net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.



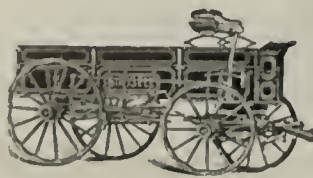
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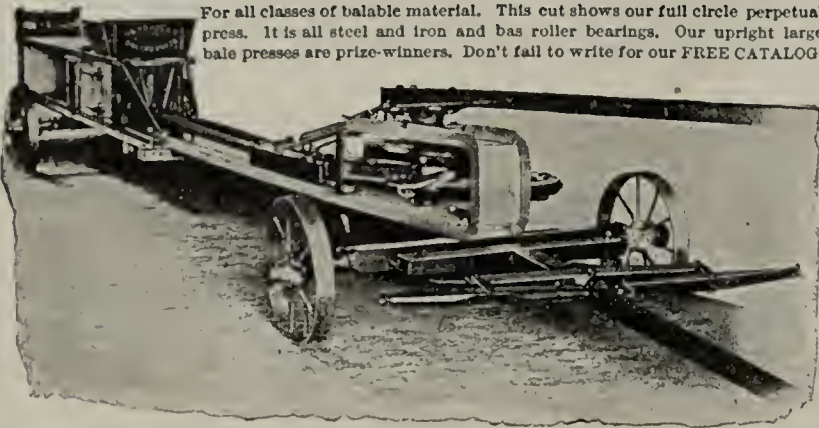
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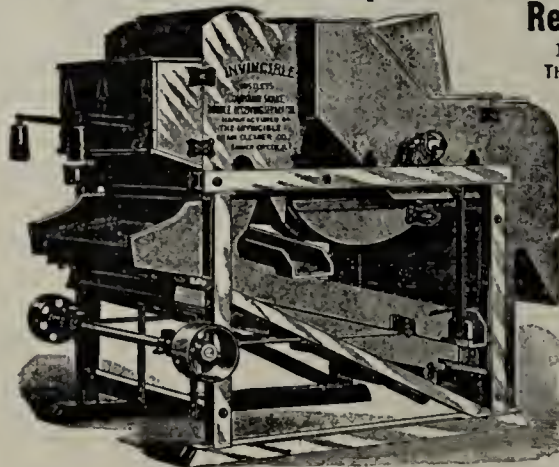
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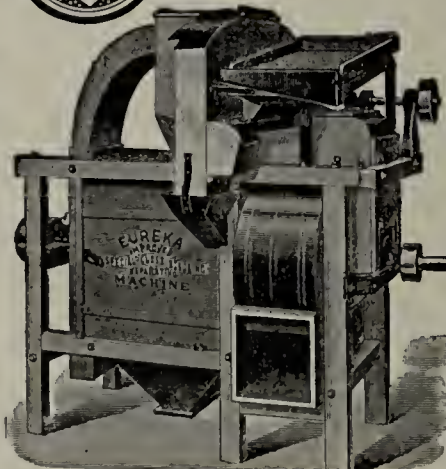
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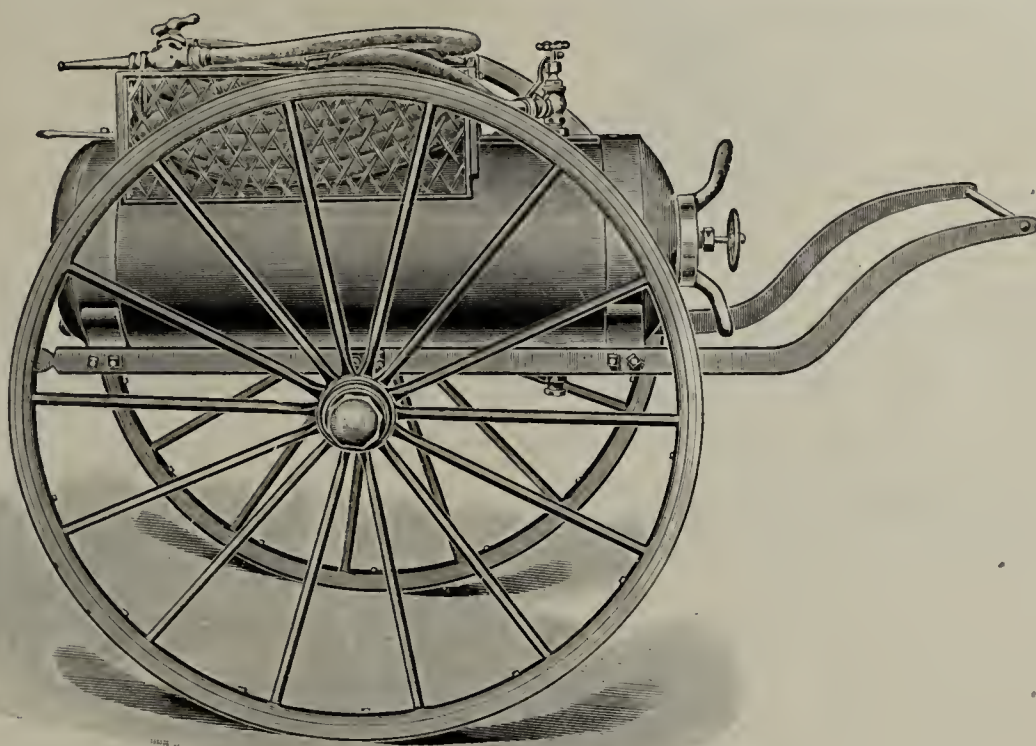
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Can you afford to have your property unprotected for the small cost of this apparatus?

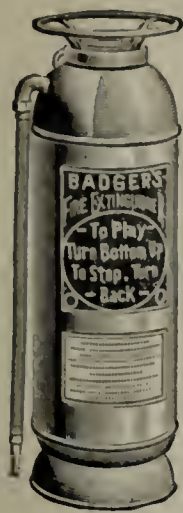
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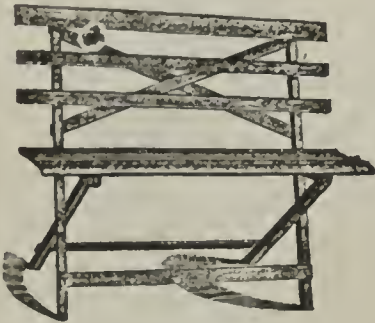
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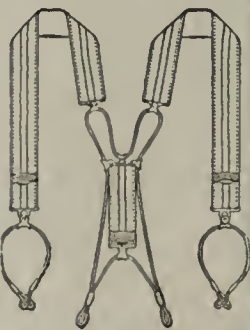
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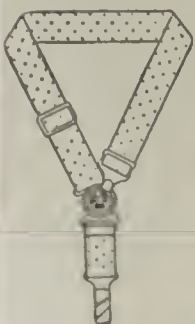
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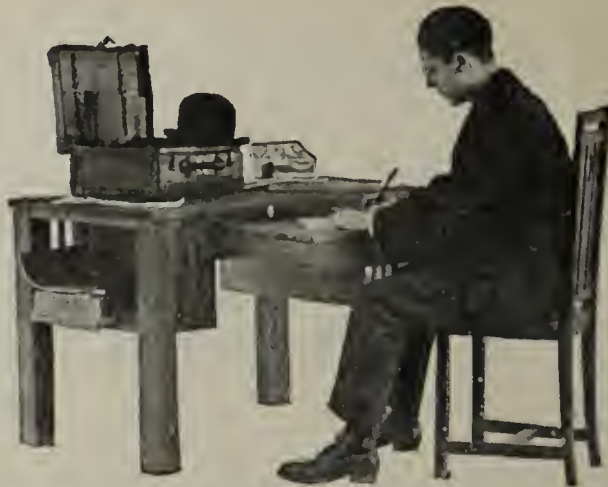
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These appliances can be relied upon as being exactly as represented.

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Four doors, zinc lined.
No. 38—Size, 38x22x48... \$17.75
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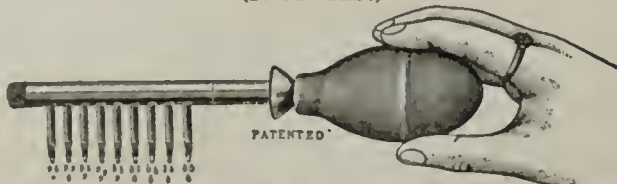
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(PATENTED.)



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EAGLE MOP WRINGERS AND BUCKETS COMBINED



Are used in homes, public buildings, hotels, barrooms, barber shops, stores, churches, schools, clubrooms, office buildings, railroad stations and everywhere mopping up or washing is done.

DIRECTIONS FOR OPERATING:

Put left foot on foothold to hold pall stationary, the other foot on lever; press lever down and rolls will close tightly together; pull mop straight out. Pressure obtained from 0 to 200 pounds, as may be required.

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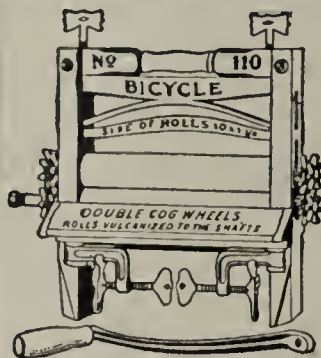
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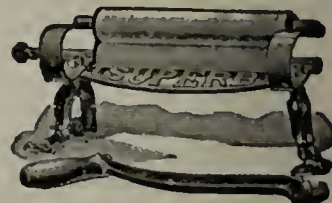
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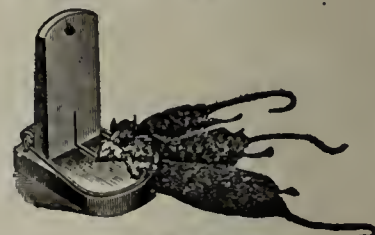


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Mouse Trap.



Rex Trap.

Made in two sizes:
large size for rats;
small size for mice.

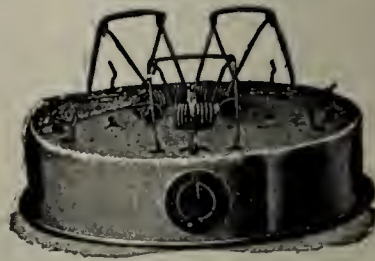
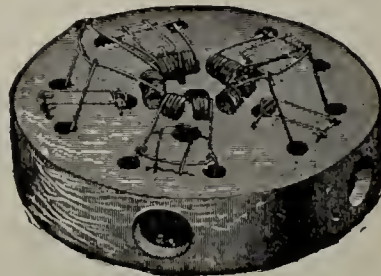


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Equipped with Safety Burner.

**SPECIAL
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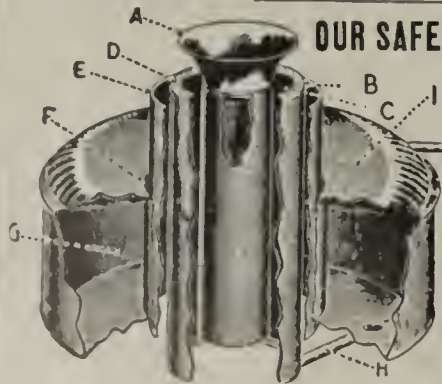
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No. 2—Brass burner; removable fount; 10-in. circular wick; height (ball down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (ball down), 28 inches.

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A—Flame spreader perfectly free from perforations.
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C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

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17. Self-Pulling
Cork Screw



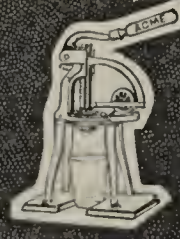
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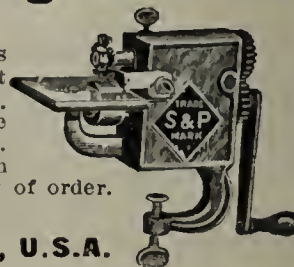
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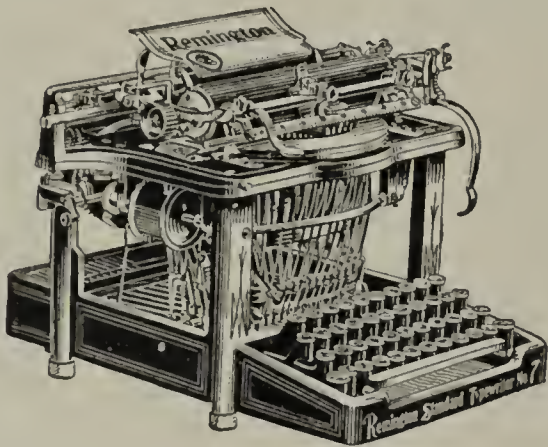
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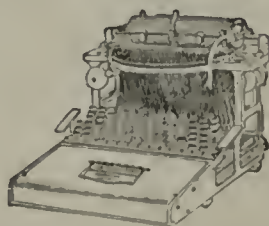
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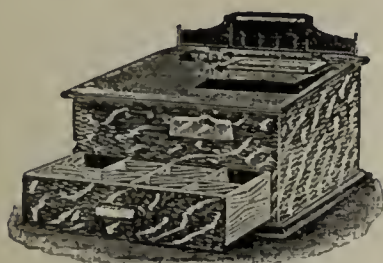
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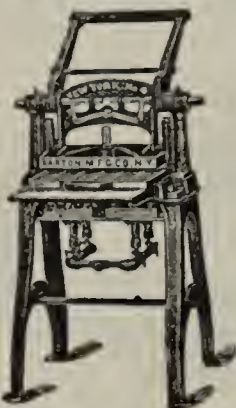
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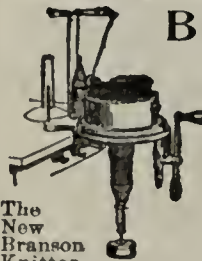
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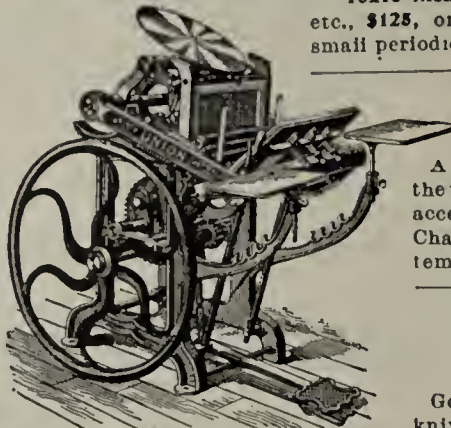


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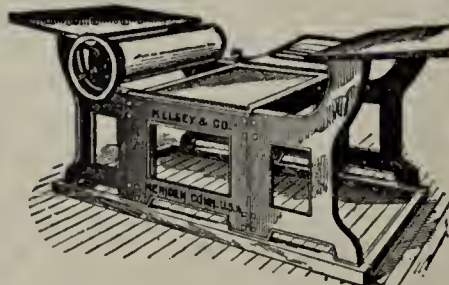


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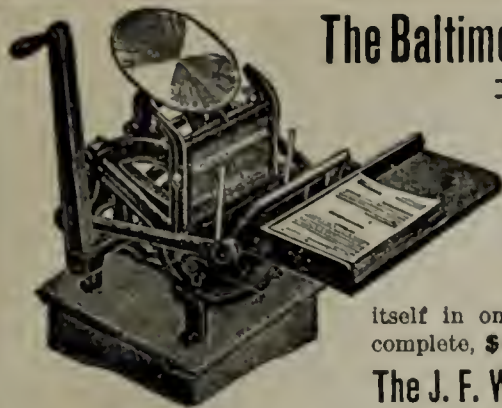
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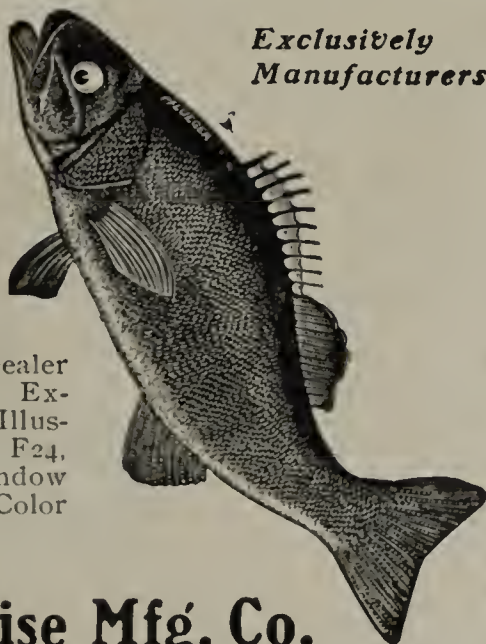
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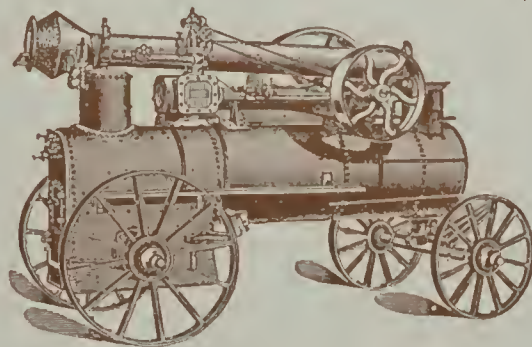
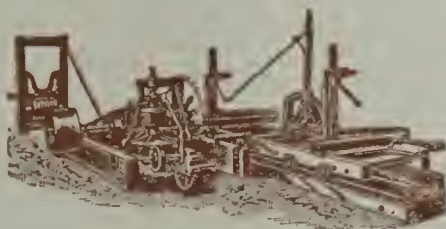
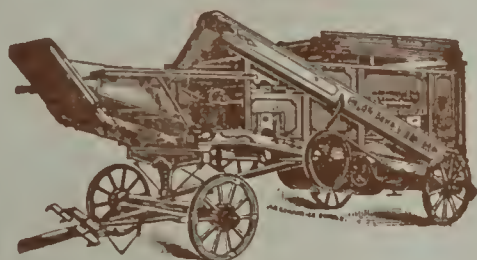
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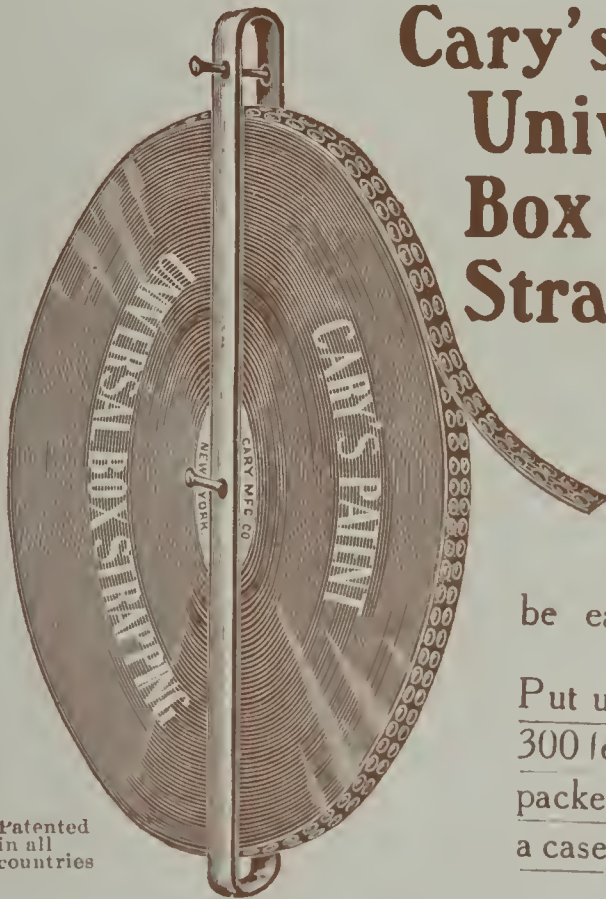
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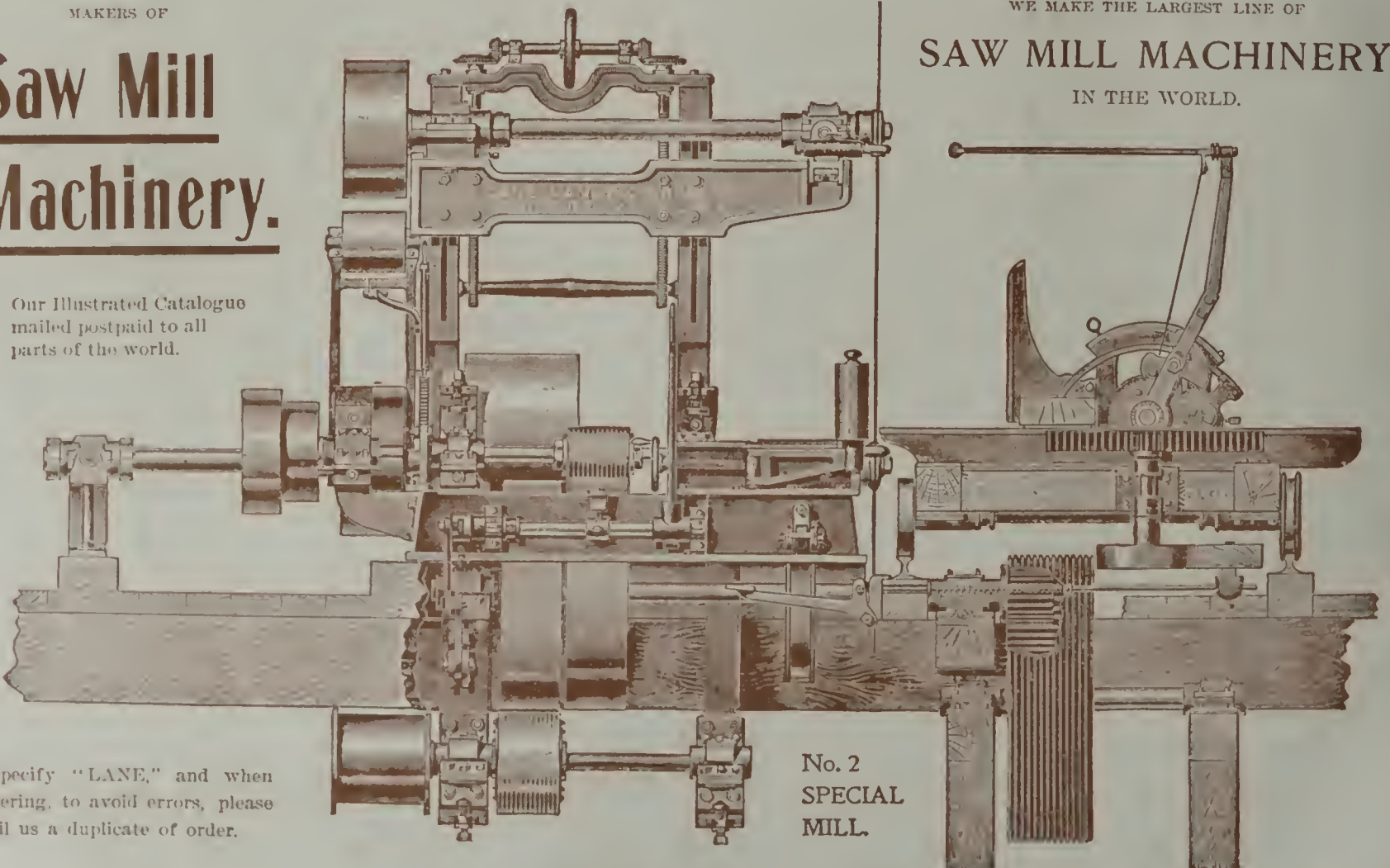
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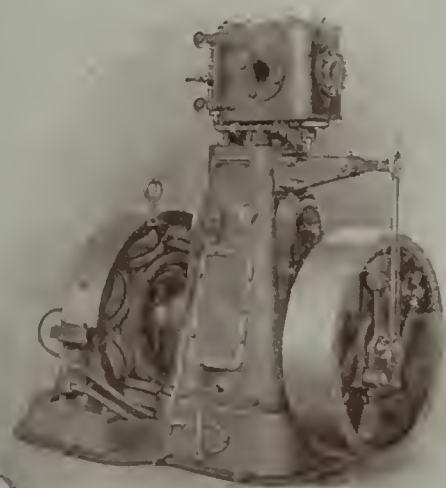
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Vol. LVI.

NEW YORK, DECEMBER 1, 1905.

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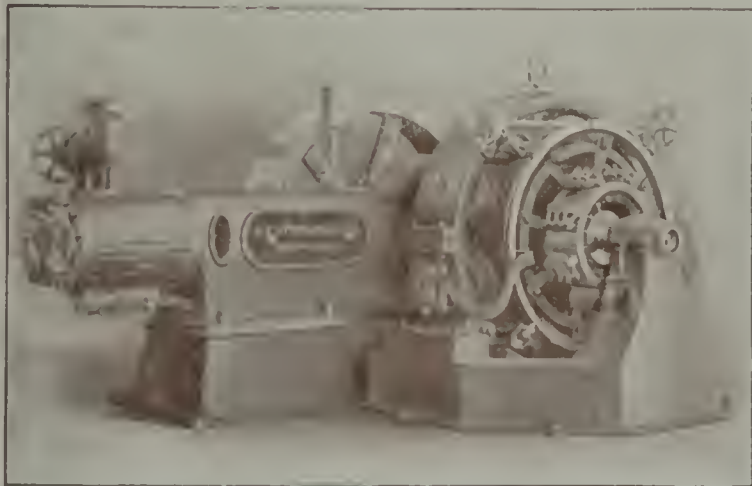
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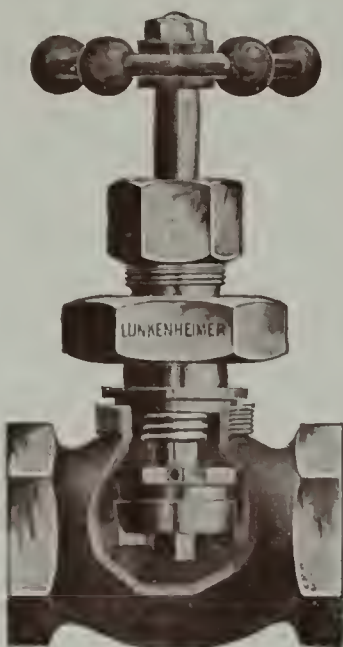
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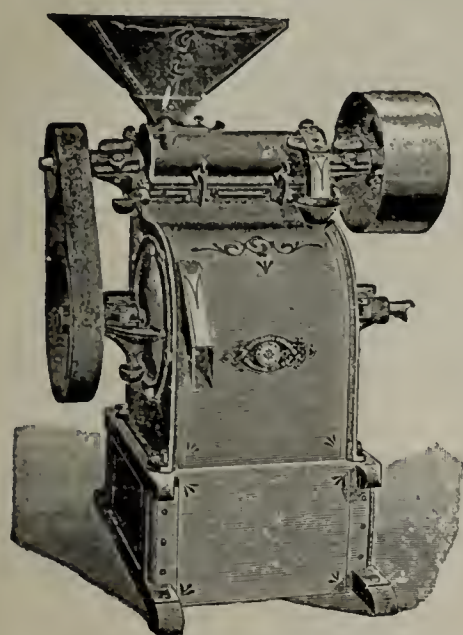
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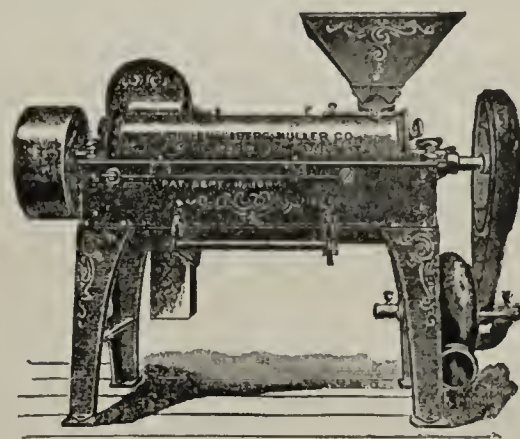


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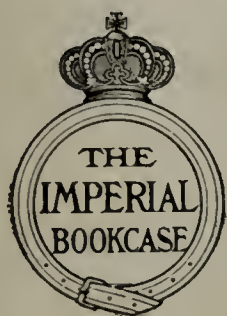
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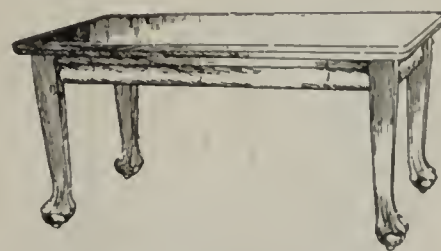
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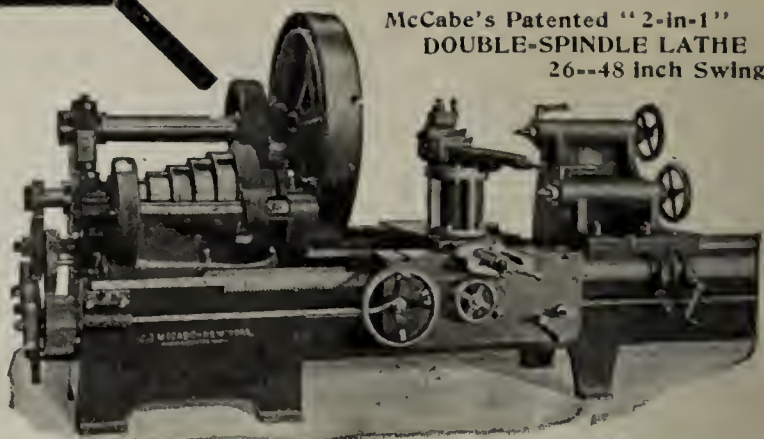
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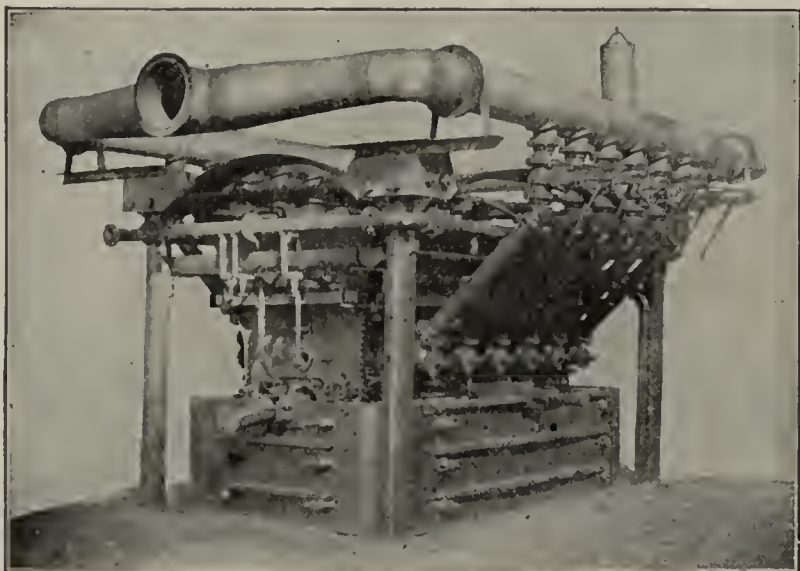
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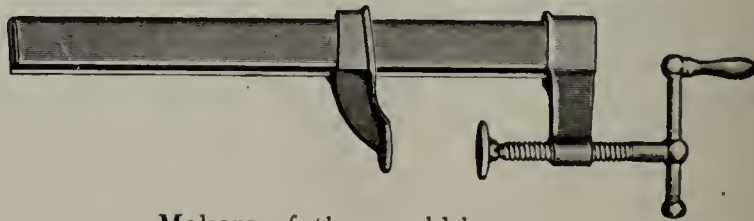
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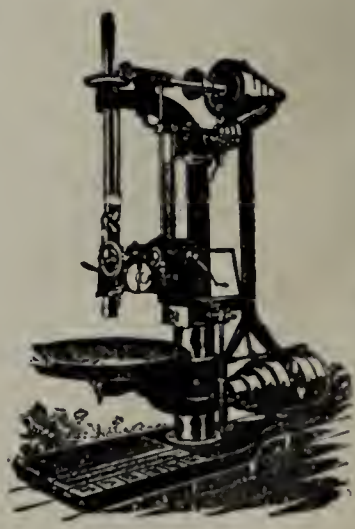
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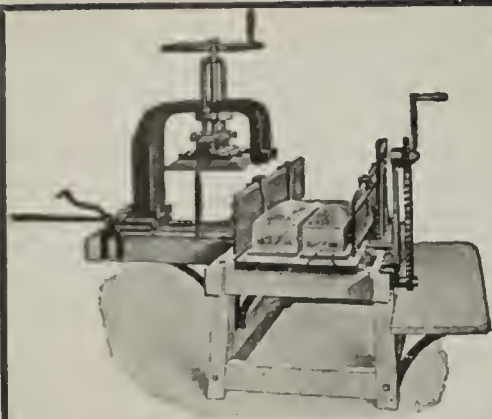
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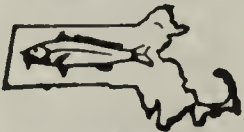
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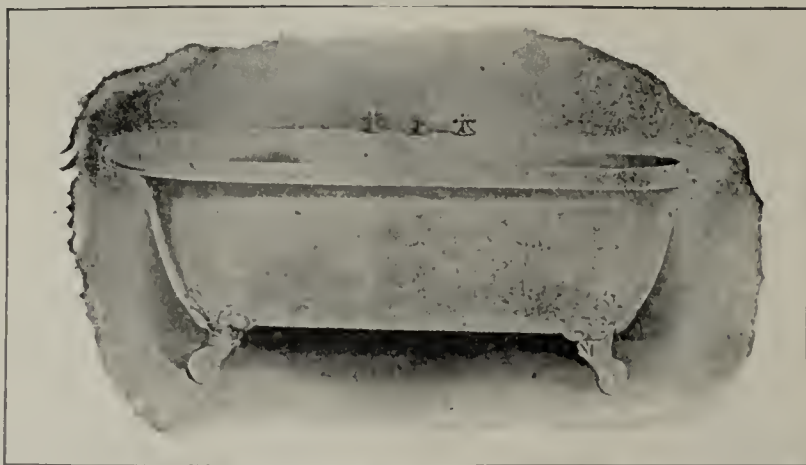


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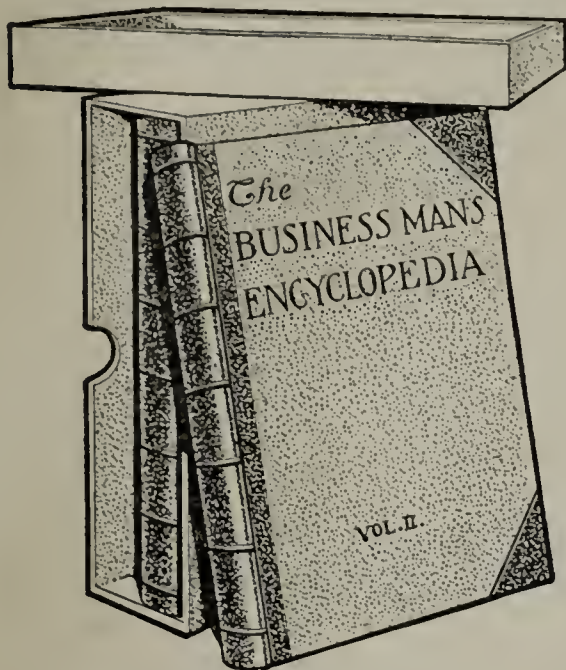
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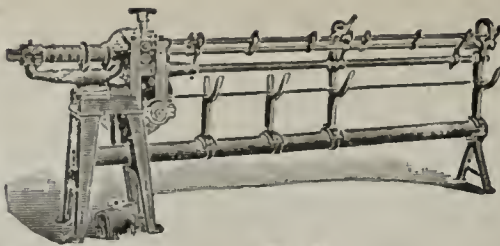
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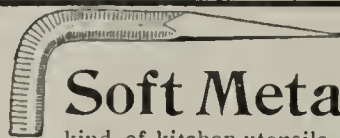
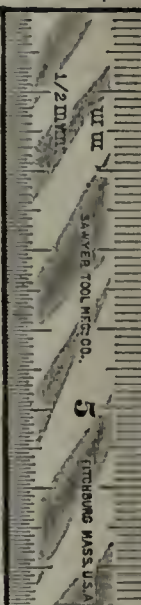
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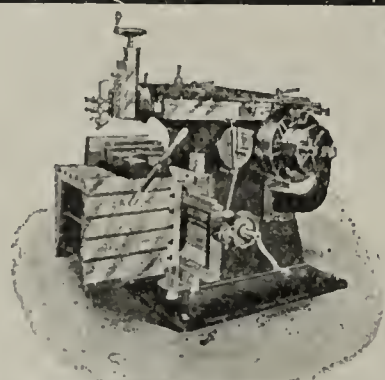
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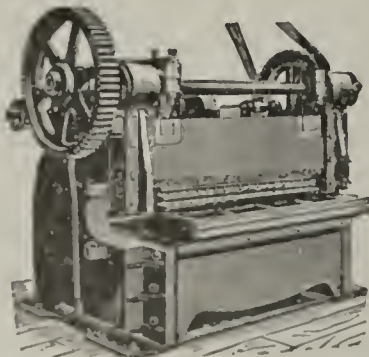
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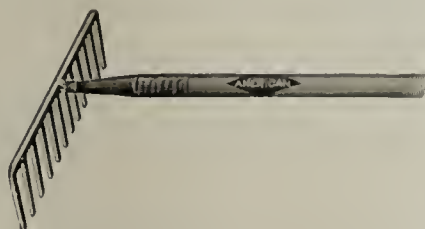
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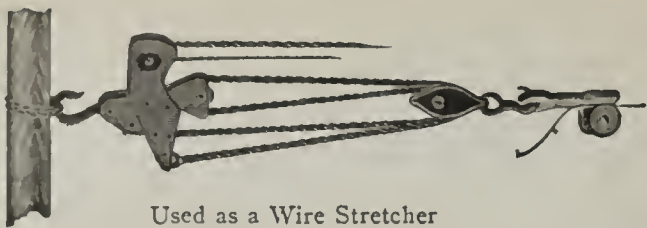


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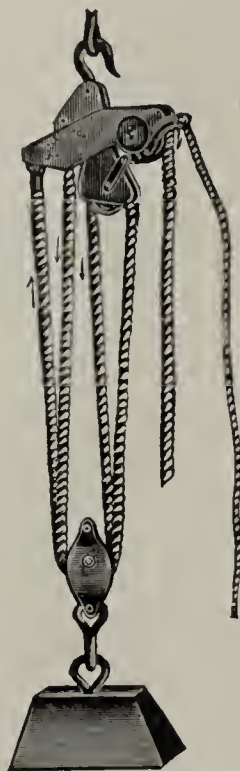
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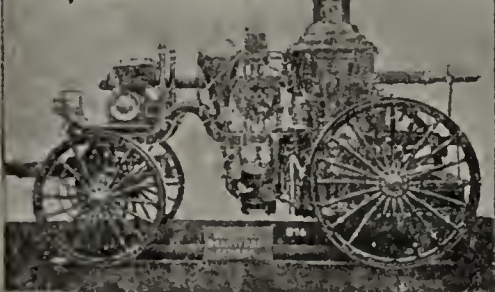
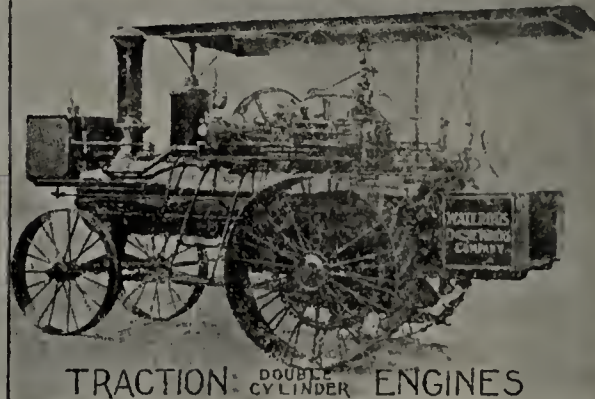
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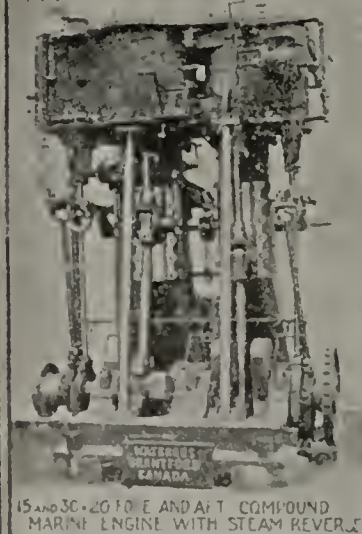
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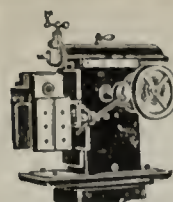
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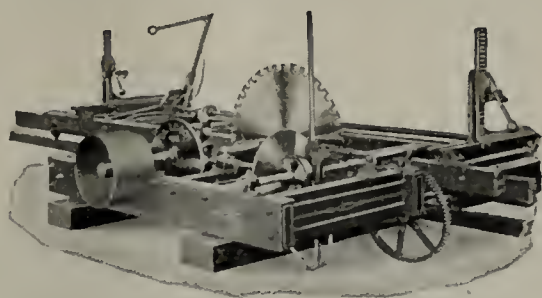
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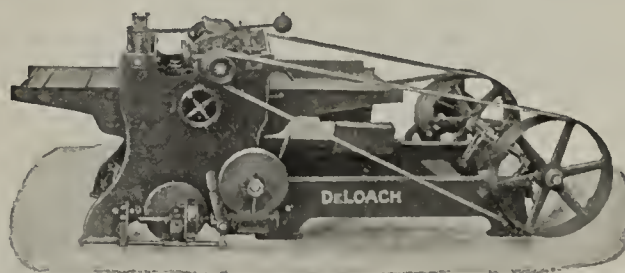
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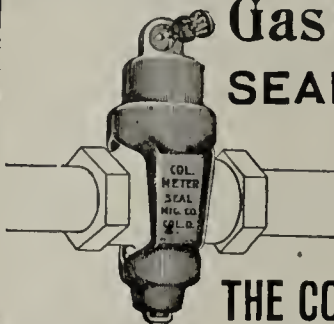
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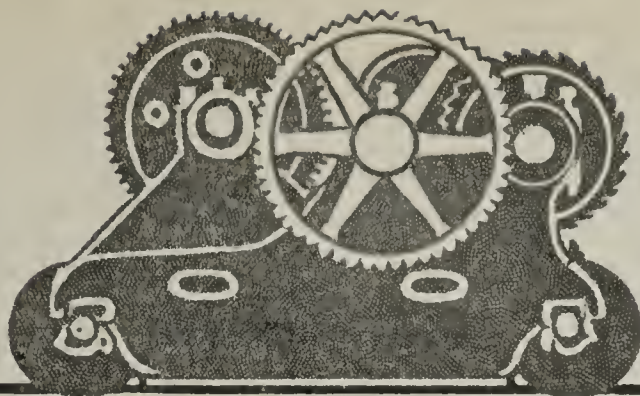
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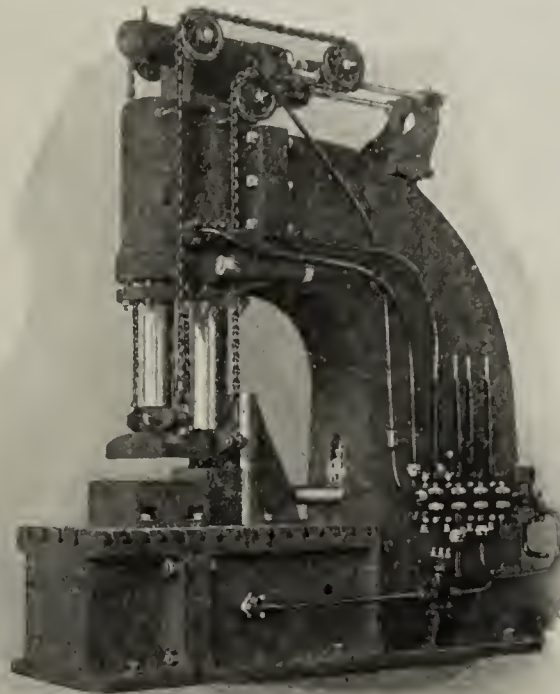
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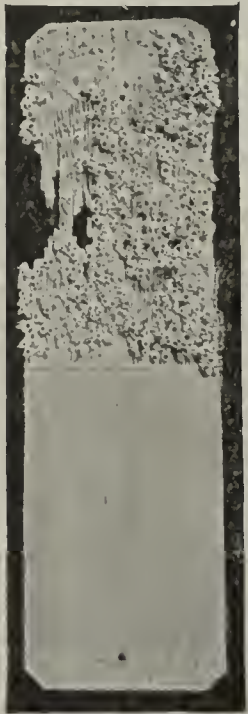
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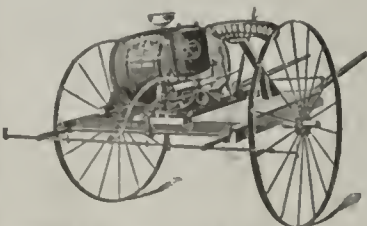
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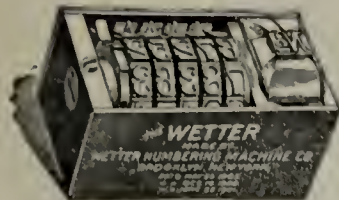
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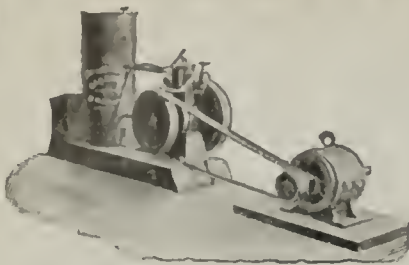
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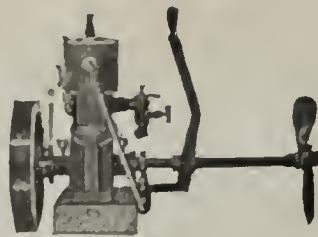
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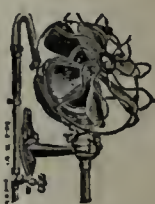
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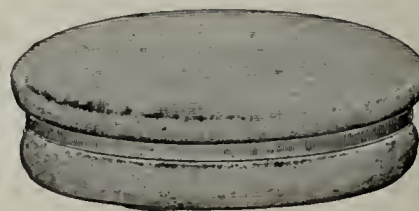
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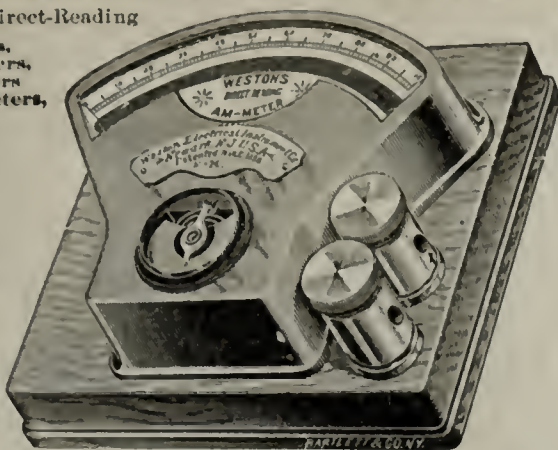
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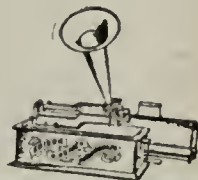
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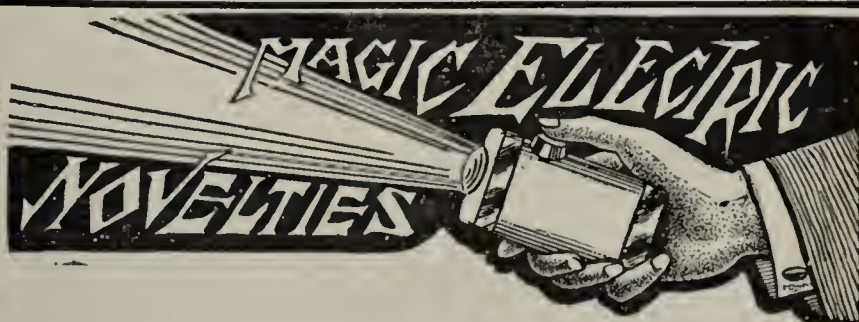
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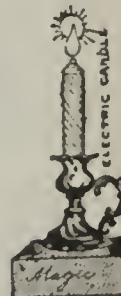
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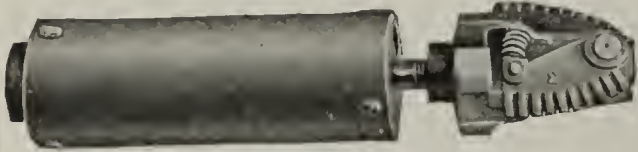
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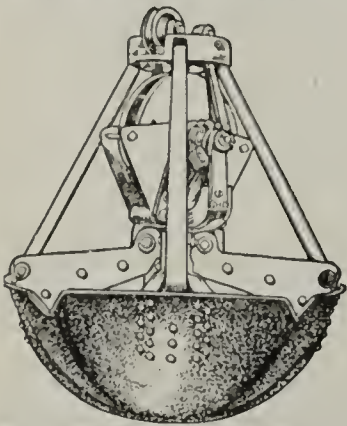
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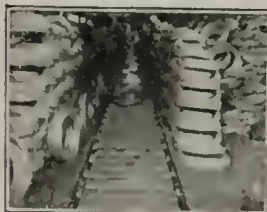
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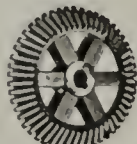
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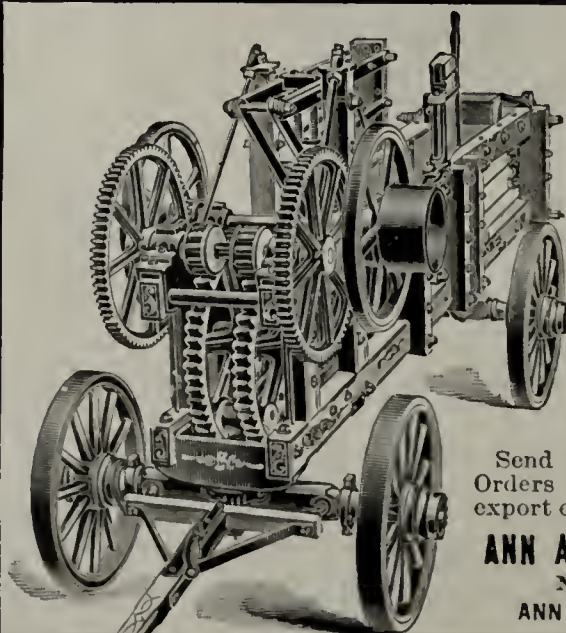
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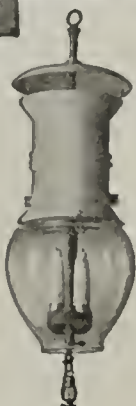
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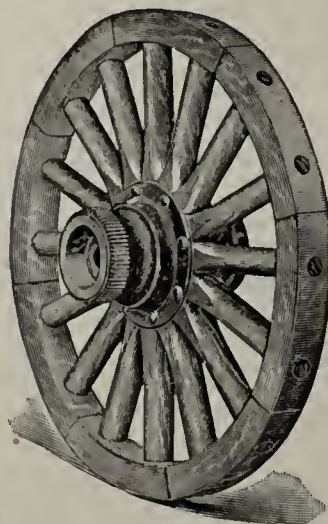
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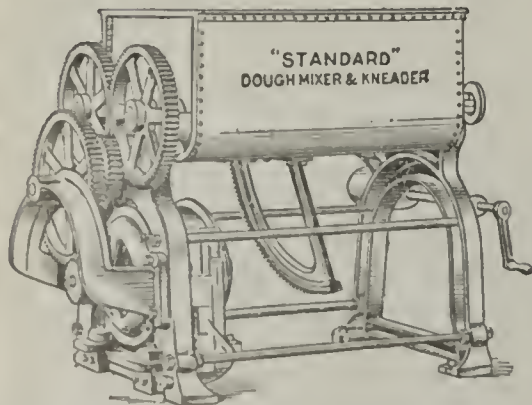
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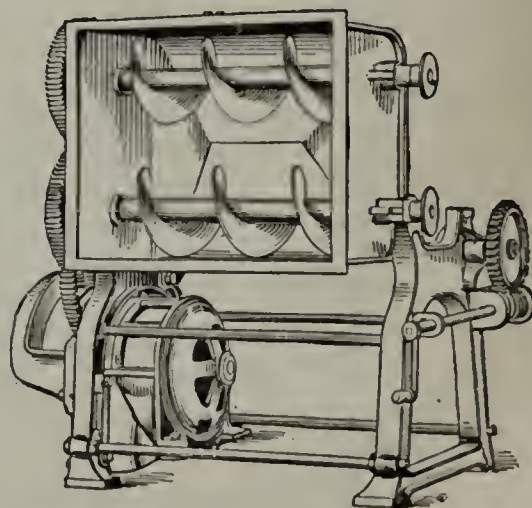
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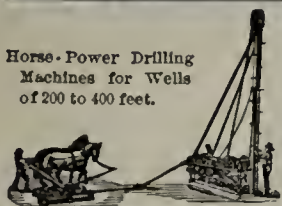
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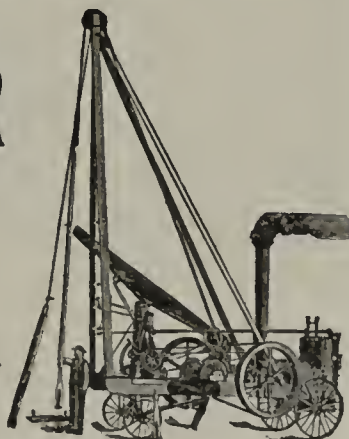
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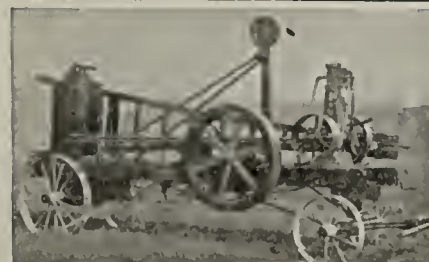
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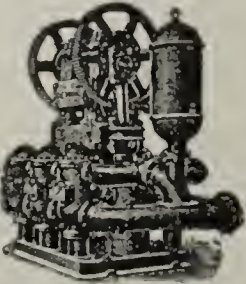
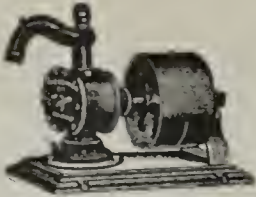
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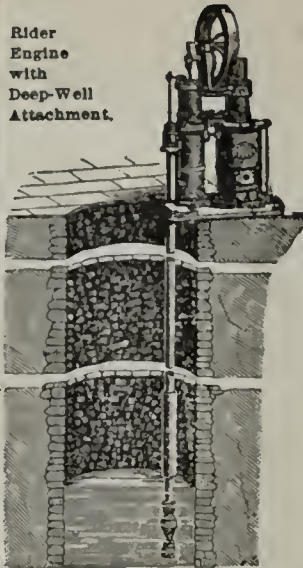
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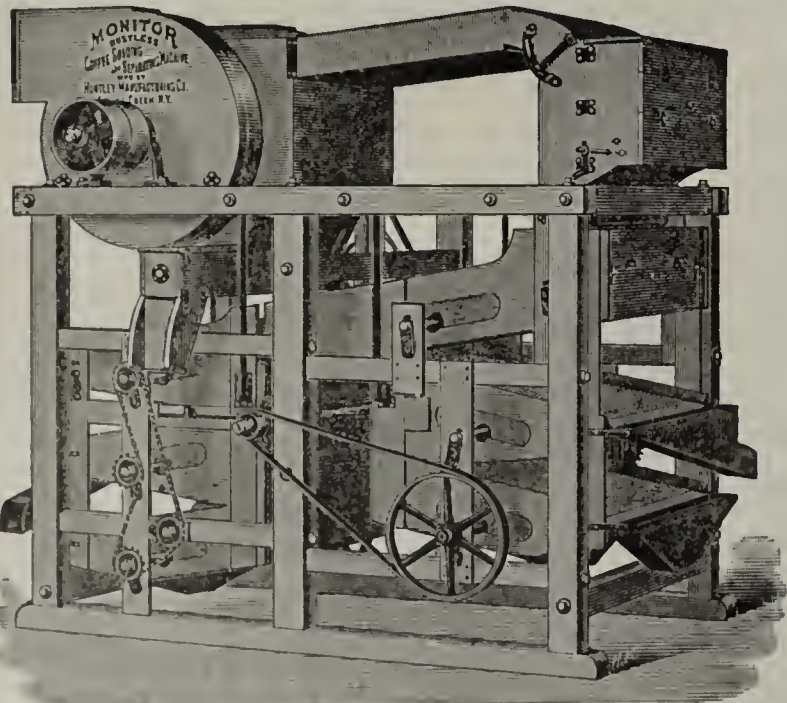
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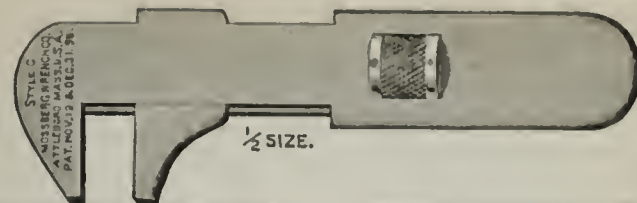
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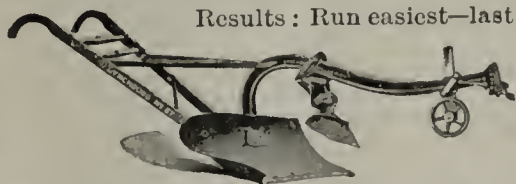
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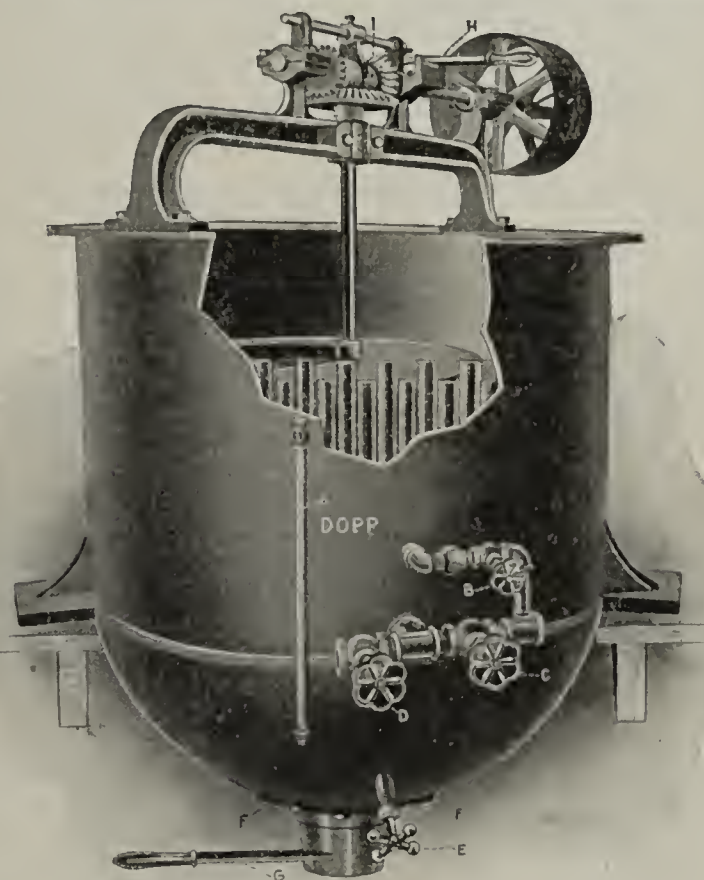
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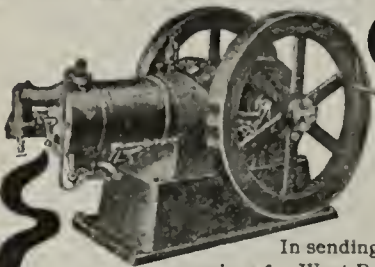
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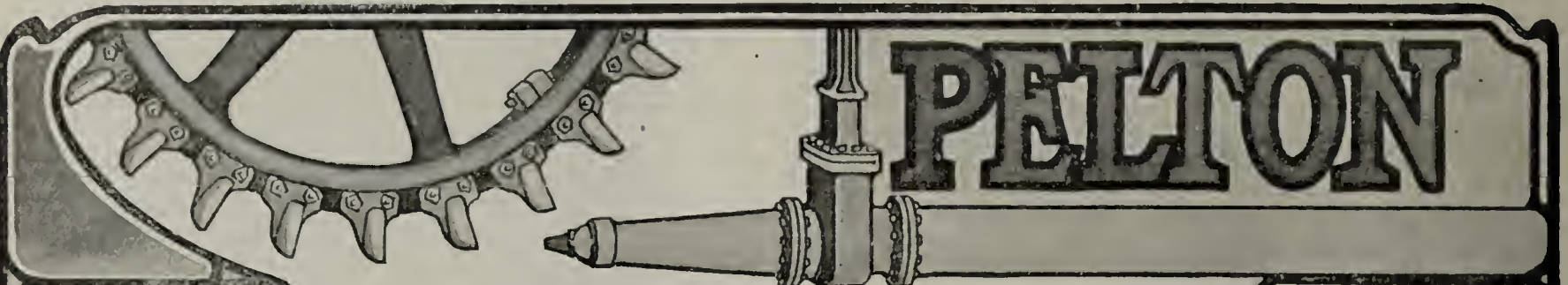
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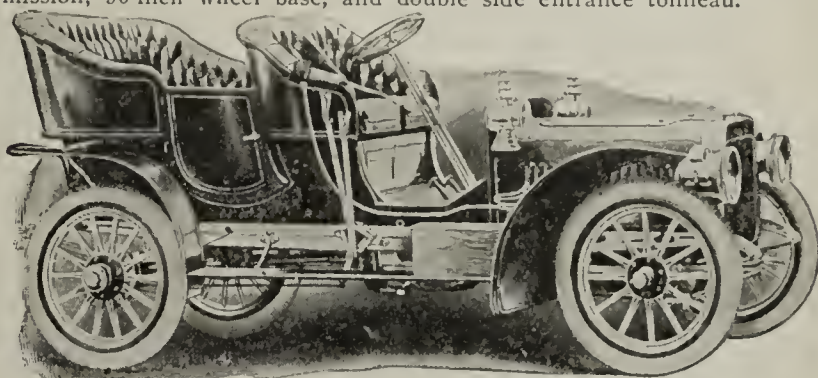
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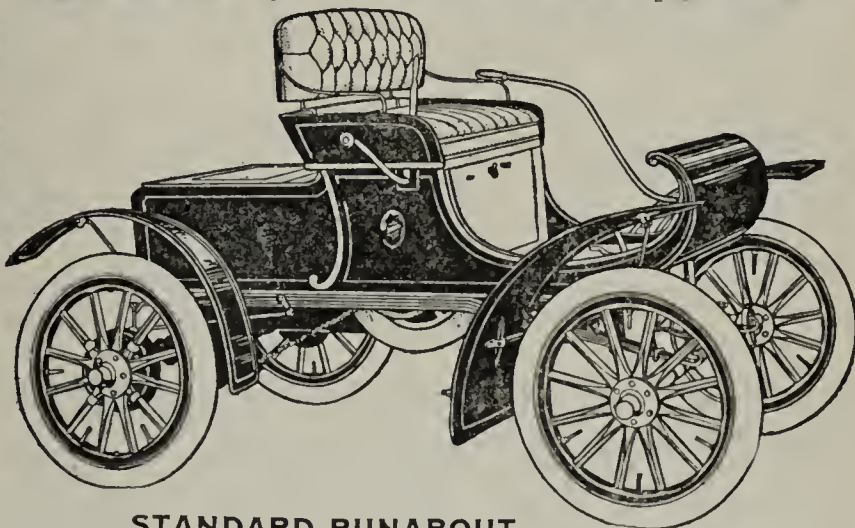
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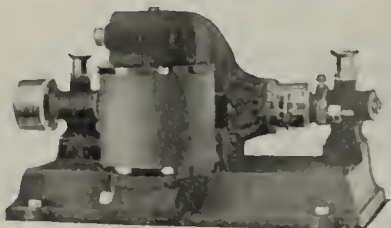
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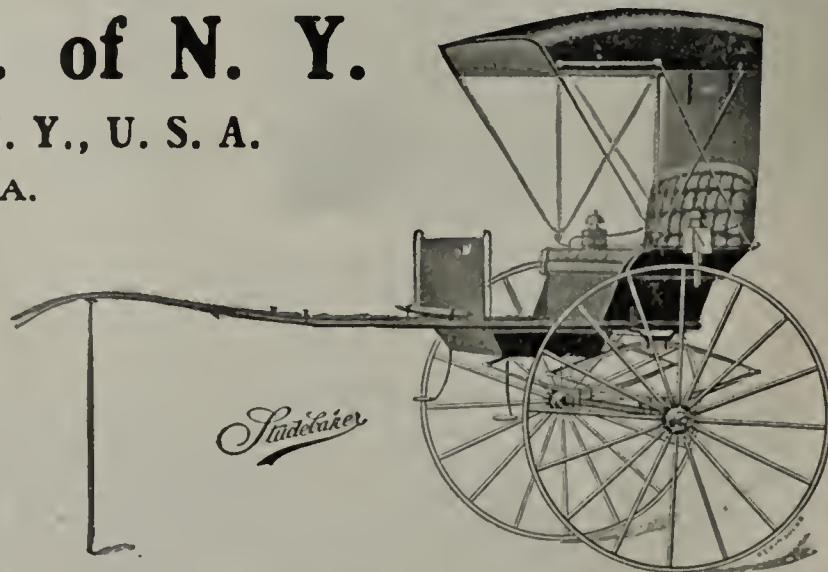
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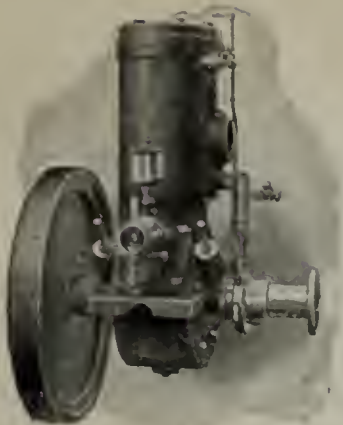
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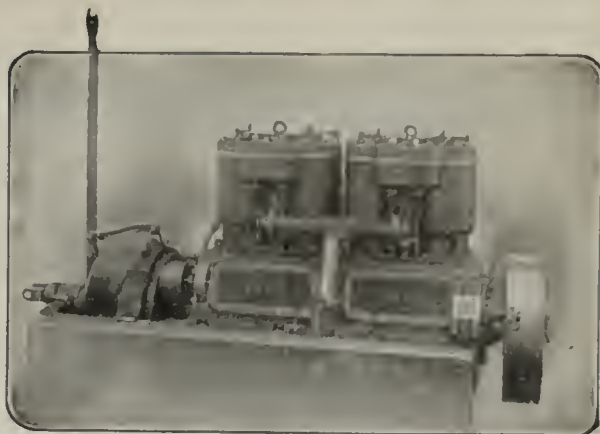


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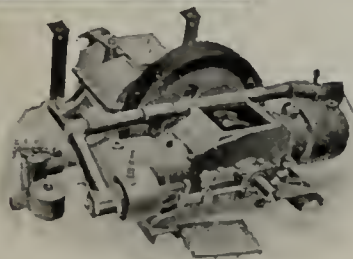


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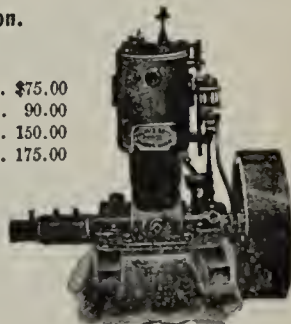
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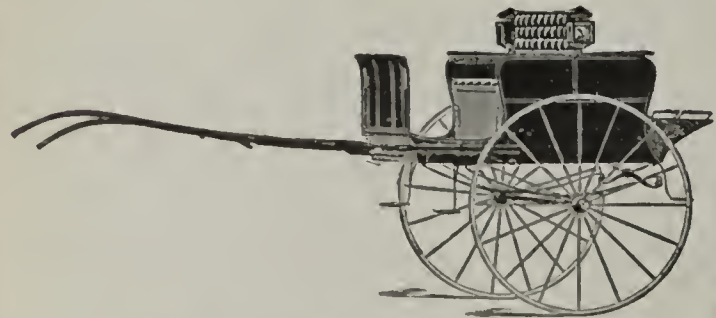
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Morocco.

The fate of Morocco, one of the few still independent countries of the Dark Continent, will be decided at the proposed International Conference soon to be held at the Spanish town of Algeciras, in the south of Andalusia, opposite the Rock of Gibraltar. We therefore think that the article on Morocco in the present issue of the AMERICAN EXPORTER by Mr. Henry L. Geissel, who visited that country in the summer of this year, is timely and will be read with interest by Americans as well as by the foreign readers of this publication. As an indication of the American interest in this gathering, it is stated that no less than fourteen persons who had secured passage from New York for Gibraltar cancelled their transportation engagements at the last moment because of the postponement. All of these were to have attended the conference in some capacity. Many of them were correspondents.

Practical Free Trade With the Philippines.

The visit of the Taft party to the Philippines last summer bore its first fruit when Representative Payne, of New York State, chairman of the Committee of Ways and Means, introduced a bill in Congress which practically grants the free admission into the United States of all Philippine products, with the exception of sugar and tobacco. Upon these, whether manufactured or unmanufactured, the bill imposes a duty of 25 per cent. of the present Dingley rates.

It further provides that on and after April 11, 1909, there shall be free trade upon all products between the Philippines and the United States and the United States' and the Philippines. Prior to that time, owing to the favored nation clause in the treaty of Paris between the United States and Spain, it is not considered practicable to reduce the tariff rates upon articles imported into the islands from the United States.

Another member of the Taft party, however, in an article in this issue of the AMERICAN EXPORTER, expresses the opinion that free trade could be inaugurated now without waiting for the termination of the agreement with Spain.

Our Next-Door Neighbor.

In view of our close relations with the Dominion of Canada there are some facts and figures contained in the recently issued report of the Department of Trade and Commerce of Canada which are of particular interest. Canada, with a population of 6,000,000 persons, imported merchandise to the value of \$251,603,000 during the fiscal year, of which over 60 per cent. was purchased from the United States, which, on the face of it, looks favorable enough from our standpoint, but there is a grave question whether these figures would not have been greater if the efforts of the Cana-

dians to bring about a closer economic union with this country had not been spurned by the United States.

There is additional consolation in the fact that while our trade with Canada was increased by about 6½ per cent., as compared with the business of the previous year, Canada's purchases from Great Britain were considerably less than those of the preceding year.

While the bulk of our business may keep on increasing, it is not probable that the strides shown in the figures above will be maintained in the absence of some amicable arrangement between the two nations. It is a well-known fact that American as well as Canadian enterprises are now supplying goods from Canadian factories which formerly helped to swell the bulk of trade passing from the United States to our Northern neighbors.

Hawaii's Labor Problem.

A new phase of the Chinese question has recently come to the fore in a serious labor situation which has developed in Hawaii. Prince Kuhio Kalanianoʻle, the Hawaiian delegate to the Fifty-ninth Congress, said in a recent interview upon his arrival in this country that the labor situation facing the people of the Hawaiian Islands was serious and called for some immediate relief. The sugar plantations are the greatest industries, and before annexation the planters depended almost entirely upon Chinese labor, but now that the Chinese are barred there is an appalling scarcity of help. Japanese are allowed to land, but they are said to be far inferior to the Chinese as plantation laborers. The Portuguese and Galicians have been tried, but they do not seem to meet the requirements.

Prince Kālianianoʻle says that he favors the admission of a limited number of Chinese under contract, similar to the British system in the Transvaal, although he is not quite sure that such a solution of the matter would meet with approval in this country.

It is entirely likely that the Chinese problem will call for a great deal of attention from the next Congress.

Imitating American Shoes Abroad.

The Washington correspondent of the *Chicago Record-Herald* quotes Mr. Frank J. Poole, special agent of the Bureau of Corporations, who has had wide experience in introducing American goods into foreign markets, as saying that Regent street in London has been lined with so-called American shoe stores on account of the great reputation built up for American footwear because of its superior quality and workmanship. English manufacturers, he adds, have taken advantage of the craze for American goods and have flooded the market with cheap imitations, made with American machinery and marked with American labels. The same is true in Germany.

Some years ago, he goes on to say, several New Jersey manufacturers established a chain of shoe stores all over Germany and made American goods popular in all of the large cities. They did the same in Austria, and the local dealers and manufacturers in both countries became so concerned about the American invasion that they appealed to their governments for protection, and demanded that American shoes should be shut out of the markets.

Boards of trade and other semi-official organizations or-

dered boycotts; municipal authorities in several places endeavored to stop the American invasion by imposing taxes and other restrictions, but all these attempts were failures, and the German and Austrian boot and shoe makers, in self-defense, were compelled to copy the American goods and fill their shelves with cheap imitations, which they offered at lower prices.

For a time this worked well, but the public soon discovered the difference between the bogus stuff and the real goods. They found that their own dealers were deceiving them, and that gave the Americans more trade and bigger profits than ever.

It might be well, comments the correspondent, if our Secretary of State should call upon our United States consuls at different English and German cities to investigate this subject and report how far our export trade has been injured by foreign imitations of our goods.

Proposed Consular Reform Convention.

Widespread interest among business men in efforts looking to the improvement of our consular service is apparent everywhere. The New York Board of Trade and Transportation has just appointed a special committee to consider the desirability of calling a national consular reform convention, to be held in Washington this winter.

The appointment of such a committee was prompted by the fact that bills for the regulation of the American consular service have been introduced in Congress for seven or eight years and have always failed to pass. The committee is to have the power to call such a convention in the name of the board, if it finds it to be desirable, to consider the proper grading of the consular service, a proper arrangement of salaries so that inequalities may be removed, permanency of tenure of office and an arrangement for filling the upper grades from the lower, new men to enter only the lower grades.

At the same meeting the board passed a resolution calling for the appointment of a committee to impress on the President and Congress the importance of reciprocal commercial treaties with foreign countries.

Hon. Newton W. Gilbert, of Fort Wayne, Ind., one of the members of the Congressional party which accompanied Secretary Taft to the Philippines during the summer, writes as follows to the *AMERICAN EXPORTER*, after referring to the article in the November number on "Opportunities for American Goods in the Philippines":

"It seems to me that our business with the Philippines can be largely increased, and will be under the legislation which will grow out of the visit of so many members of Congress there during the past summer. In fact, my impression is that we can do many things to increase trade with the Orient generally.

"I was sorry, for one thing, that our consular service in Japan and the Orient seemed to indicate that we had not given anything like the attention to the trade in these countries that the European nations have. For my own part, I think it will be money well spent to increase the character and efficiency of our consular service. It seems to me this is one of the most important questions which those interested in foreign trade have to do with."

MOROCCO'S LATENT RESOURCES.

BY HENRY L. GEISSEL.

The forthcoming conference of the powers to determine their respective rights and privileges in Morocco—to be held in that country in the near future, and at which the United States will be represented by Minister Gummere of Tangier—renders an article on Morocco and its trade opportunities of particular interest at this time to American manufacturers. During his visit to Northern Africa this summer the writer made a special study of the situation in Morocco, the results of which are here given.

Mulai-Abd-el Aziz, the present Sultan of Morocco, known to his subjects under the title of Emir-al-Mumenin, or Prince of True Believers, is a man easily influenced. He is relatively young, having been born in 1878. For a number of years he surrounded himself with various European favorites, most of whom, it is said, profited by their relations with him. The Sultan listened freely to their suggestions, bought automobiles and carriages, installed billiard tables at his palace at Fez, constructed a private railroad in the gardens of his castle, rode a bicycle and drank champagne.

That such sudden adoption of European ideas in a country like Morocco created a very bad feeling among the Moors is readily understood. One insurrection and uprising followed another, kidnapping of wealthy Europeans and Americans occurred frequently, a new pretender to the throne appeared and threatened the Sultan at the very walls of Fez, tribes fought each other and general chaos prevailed to such an extent that it was necessary for other countries interested to come to an understanding regarding their respective rights. By the Anglo-French Convention of April, 1904, Great Britain recognizes that it appertains to France to assist in the administrative, economic, financial and military reforms in Morocco, but reserves the rights which by treaties or usage she now enjoys.

These arrangements were accepted also by Spain in a Franco-Spanish convention, and almost everything regarding the further policy of Morocco seemed to be settled, when the German Emperor made his appearance at Tangier. This, as will be remembered, was followed by lengthy conferences at Paris, the final result of which was the agreement of an international conference regarding Moroccan affairs. The United States, which recently established a legation at Tangier—the first on the Dark Continent—will be represented at

this conference by the United States Minister in Morocco, Mr. J. R. Gummere, who for many years has been the American Consul General at that place, and is, therefore, very familiar with Moroccan affairs.

The conference will be held at the little town of Algeciras, opposite Gibraltar. Spain proposed this place, perhaps not only on account of its proximity to the Moorish coast, but probably also for the reason that Algeciras possesses one of the finest hotels in Spain, the "Reina Christina."

The area of Morocco can only be vaguely estimated, as

the southern frontiers, toward the Sahara, are undetermined. According to the most recent calculation, the area of the Sultan's dominions is about 219,000 English square miles, or, roughly speaking, the size of Germany. The estimates of the population of Morocco vary; it is generally considered to be about 6,000,000. The number of Christians does not exceed 7,500, 5,000 of whom belong to Tangier alone. Much of the interior of Morocco is still unexplored.

The annual revenue from customs is put at \$2,500,000, and taxes are, at least in normal conditions, levied throughout the country, but the amount received is not known.

The form of government of the Sultanate or Empire of Morocco is in reality an absolute despotism, unrestricted by any law, civil or religious. The Sultan is the chief of

state as well as the head of the church. He has six ministers, whom he consults if he deems it prudent to do so, otherwise they are merely the executive of his unrestricted will. They are the Grand Vizier, the Ministers for Foreign Affairs, Home Affairs, War, the Chief Chamberlain, Chief Treasurer and Chief Administrator of Customs.

Has No Railroads.

Morocco has no railroads. There are postal services under the control of the British, French, German and Spanish governments. There is a daily service of couriers from Tangier to Fez and Alcazar, to Tetuan and to the coast towns Rabat, Laraiche, Darl-al-Baida, Saffi, Mazagan and Mogador. There are also couriers between Laraiche and Alcazar, and between Fez and Mequinez. The transportation of goods from the coast towns to the interior is carried on by caravans, the camel being the principal beast of burden.

Industry in Morocco is in its infancy. The principal branch is that of the manufacture of carpets.



SULTAN OF MOROCCO WITH AN AMERICAN BICYCLE.

Makes the Finest Leather.

The leather made at Tallet, Marakesh, Fez and Tetuan enjoys a universal reputation. The Morocco leather is remarkable for its flexibility, due to a very long maceration, sometimes ten years, as a Moorish gentleman at Tetuan as-



MOORISH TRADERS.

sured the writer. Much of this leather is used in the manufacture of slippers, of which considerable quantities are exported. Saddles are also manufactured in large quantities. The once famous industry of the manufacture of arms has almost entirely disappeared. There is an arsenal at Fez, equipped with European machinery and superintended by an Italian army officer.

Twenty-five years ago the Sultan had built at Tangier a flour mill, which, however, has been abandoned. There are at the present time eight steam flour mills in Morocco, of which five are at Tangier, one at Laraiche, one at Saffi and one at Mogador. They all are operated by Frenchmen.

There are also some cigarette factories at Casablanca, artificial mineral water factories at Tangier and Tetuan, a distillery at Laraiche, a small match factory, a sawmill and a screw-cutting plant at Tangier. This list pretty well sums up the present industries of Morocco.

Great Agricultural Possibilities Offered.

Few countries in the world offer such tremendous possibilities for agriculture as does Morocco. The soil, as a general rule, is very fertile, the climate is mild in most districts and labor is cheap. Unfortunately the disturbed political conditions have always been a great drawback to its normal development.

Wheat, barley and maize are the principal products of the South; in the districts around Tangier barley and a peculiar kind of sorghum are cultivated. Fruit trees of the finest species are found all over Morocco. Other products of the soil include beans, chick-peas, linseed, bird-seed and gum.

Her live stock is one of the principal resources of Morocco, and is exploited exclusively by the natives. Morocco produces wonderful horses, the most famous among them being those of the Berber type. Mules and donkeys are raised everywhere. The Morocco camel, which in reality is a dromedary, is far bigger, heavier and more robust than its

Algerian and Tunisian congener. Most of the freight for the interior is carried on camel back, and the camel, together with the mule and donkey, is still the principal means of transportation throughout the country.

The Mineral Resources.

Morocco is said to be rich in minerals, but no survey has ever been made. According to some well-known geologists the copper deposits of Rio Tinto, the lead deposits of Linares and the silver deposits of Almeda in Spain extend from the peninsula through the sea to reappear in the Atlas and Andjera mountains in Morocco. Iron ore is said to abound in the Atlas, antimony is found in many localities; on the Riff there is the famous Djebel'Reçao—the mountain of lead; sulphur occurs near Marakesh, nitrate near Tarudant, while coal deposits are said to exist on the coasts between Ceuta, Tangier and Tetuan. Rock salt is found in large quantities in many regions.

No Trade Statistics.

It is a very difficult matter to state the exact value of the total trade of Morocco. No statistical returns are kept, and whatever information there is on hand is based on the reports of the foreign consuls in the principal ports. A gentleman who has been living in Tangier for more than twenty years, and a man who can speak with authority on commercial matters, told the writer that he estimated the value of the foreign trade of the Sultanate, exports and imports, at \$23,000,000 per year. Of this sum about \$14,000,000 represents imports and the balance exports.

As a rule, the Moroccan merchant is honest. It is very seldom that a failure occurs. The writer was assured by leading European importers at Tangier that they had no complaints to make about non-fulfillment of obligations undertaken, though, on account of the scarcity of money, payments are frequently delayed. A number of Moorish merchants have their correspondents at Marseilles, Genoa, Man-



MOORISH PALACE.

chester and Hamburg, with whom they are in constant touch. It is true that the Moor looks for cheapness, but he also appreciates quality. For instance, in the coast towns the cheap Austrian and Belgian sugar is being gradually replaced by French sugar, in spite of the fact that the latter product costs from 3 to 4 francs more per

quintal. Certain cottons from Catalonian mills, though nice in appearance and cheap, have not been able to hold the market in competition with the more durable English goods. As to woolen goods, the Moors have long hesitated to adopt them; in former years, they came chiefly from France, but the trade is now turning to Germany, Italy and Switzerland.

Folding, packing and shape must be in conformity with local usage. Thus, the sugar must always be in loaves of 1,400 grams; all attempts to sell it in other weights and make-ups have failed. It was only recently that a shipment of 1,500 tons of sugar from Trieste was refused, because the labels on the packages were black instead of red!

The Foreign Commerce.

All the foreign commerce of Morocco is transacted at the larger coast towns, of which Tangier is the most important. The trade between these towns and those of the interior is carried on by means of caravans.

Tangier is also the seat of the foreign ministers. The Sultan has a representative there, who in turn transacts the official business between the foreign legations and the Moorish Government at Fez.

The population numbers about 50,000, of whom about 9,000 are Europeans, most of them Spaniards. The total imports during the year 1904 amounted in value to \$1,620,000, chiefly from France, Great Britain and Germany. The principal items of import include: Cotton goods to the value of from \$800,000 to \$1,200,000, of which nine-tenths come from Great Britain; sugar, woolens, silk goods, flour, candles, hardware, iron and steel for building purposes, tobacco, wines and spirits.

Casablanca is another important port on the Atlantic coast. It has a great future before it; the districts around the town are famous for their extremely fertile soil, and are densely populated. The inhabitants number about 30,000, of whom 5,000 are Jews and 600 Europeans. The adjacent country is very rich and the exports of agricultural

principal items of imports include cotton goods, sugar, woolens, silks, canvas, iron, steel and hardware. While the textile goods come chiefly from England, the imports of iron, steel and hardware are almost altogether from Germany. They include tools of every description, iron and



TRANSPORTATION IN MOROCCO.

steel in bars, cutlery, nails, mule shoes, tableware, locks, hinges, lamps, structural iron for building purposes, wire and wire netting and cooking utensils.

The city of Larache is situated on the left bank of the Oued Kous River, and is divided into the Moorish and European quarters. The European stores are all outside the walls, along the river, and do a considerable trade with the caravans going from the town to the interior. The population of Larache is about 15,000, of which 2,000 are Jews and 60 Europeans. The Jews do not live in the Mellah, but are allowed to install themselves in the Arabic quarters. The trade of Larache is increasing greatly, and this town will in all probability become a great competitor of Tangier. Larache is practically the port of Fez and leads to the rich valley of Loukkos, which offers an immense field for agricultural exploitation. The imports are about the same as those of other Moorish cities, and are principally cotton goods, sugar, flour, candles and ironware.

The city of Morocco, in Arabic Marakesh, is, after Fez, the largest town in the country. It is situated in the vast plain of Tensift, on the left bank of the river of the same name, and has about 65,000 inhabitants, including Moors, Berbers, Jews, Timbuctoo negroes and Europeans. In spite of the fact that Marakesh is one of the hottest towns in the country the climate is very healthy. The water is of an excellent quality and is distributed by numerous springs. The exports of Marakesh are very large, consisting chiefly of fruits and nuts, including almonds, dates, figs, etc. Marakesh is the principal market for the finest kind of Arabic horses. The trade with the South of Morocco and with the Soudan is carried on by large caravans. These caravans go, as a rule, three times a year from Marakesh to Timbuctoo. This caravan trade seems to be in a flourishing condition still. It is said on good authority that it represents a profit of about 400 per cent. In other words, a camel leaving Marakesh with about 150 francs' worth of merchandise returns worth about 600 francs, supposing, of course, that it returns at all.

Another city of commercial importance is Mazagan, the trade of which town is of about the same volume as that of Casablanca. The population is about 12,000, including 300



WALLS OF FEZ.

products are steadily increasing. During the year 1904 the value of Casablanca's exports amounted to nearly \$2,000,000, while the imports averaged about the same figure. The great bulk of Casablanca's trade is carried on with Great Britain and France, followed next by Germany and Belgium. The

Europeans. The total trade is estimated at about \$3,000,000 a year.

A very important port is Mogador, situated to the south of Morocco, on the Atlantic. The city of Mogador was founded by the Sultan Mahomey, and it is said that Christian slaves were employed in the construction of the town. The population is about 22,000, nearly one-half being Jews. Large caravans leave Mogador regularly for districts south of the Sahara Desert. The import trade amounts to about \$2,000,000 a year, the goods coming chiefly from Germany, Great Britain and France. Considerable quantities of sugar are imported from Austria-Hungary. While the United States bought last year over \$300,000 worth of goat skins at Mogador, there were no imports at all from America. On the other hand German trade at Mogador is steadily increasing.

The town of Saffi is situated on the Atlantic coast, between Mogador and Mazagan. Its population is about 10,000. The total annual imports represent a value of nearly \$650,000, chiefly cotton goods, sugar, iron and hardware, tools, cutlery, candles, tea, wine and spirits.

The town of Rabat is one of the most interesting cities in Morocco. It is surrounded by the most wonderful semi-tropical gardens of Africa, where almost every species of Southern fruits and flowers can be found. The town is also celebrated for its manufacture of rare carpets, pottery, saddlery and embroidered silks. During the year 1904 the imports of cotton goods into Rabat amounted to nearly \$300,000.

The Future of Morocco.

There is no doubt that Morocco will offer at no remote day a valuable market for a great number of commodities manufactured in the United States. The great manufacturing nations must seek foreign trade; this is a necessity. Commercial pioneers are traversing the remotest parts of the world for the purpose of creating a demand for modern commodities, and the Moors, who up to the present time resented these advances, will awaken and adapt themselves by and by to the present standards of commerce. Other nations are already on the ground. Germans have their branches in the principal cities, not only on the coast, but also in the interior. Some time ago the leading manufacturers of Barcelona and the province of Catalonia organized a Spanish commercial expedition to the interior of Morocco. The expedition was led by a Spanish merchant intimately acquainted with the trade and customs of Morocco. The visitors carried with them samples of their products and stocks of goods for immediate delivery. They visited Tangier, Laraiche, Mequinez, Rabat, Fez and other places.

German boats are now running regularly all along the Moroccan coast, touching at Tangier, Laraiche, Casablanca, Rabat, Mazagan, Saffi and Mogador. The German trade in textiles, firearms and munitions, ironware and confectionery has largely increased of late.

The International Conference of Algeciras will have a great influence upon the development of the immense natural resources of Morocco. The Government at Fez has already decided on large improvements of the harbor of Tangier; work on other ports of the Atlantic coast will follow. What Morocco needs above all are modern means of transportation, and these once established will inaugurate a new era for the Sultan's empire.

QUALITY AS WELL AS QUANTITY.

Mr. Chas. M. Schwab, former president of the United States Steel Corporation and now president of the Bethlehem Steel Corporation, has recently returned from a visit to Germany, where he carefully inspected some of the most notable steel works in that country. In an interview a few days ago he said, among other things, that while the United States had solved the question of vast economical output, and thus rendered a great service to civilization, we have not, as a nation, given the attention that Germany has to the matter of quality in steel making. He thinks that the next great industrial problem of American steel makers is not simply to match Germany, but to beat her in the quality of her products. This, in his opinion, will have an important bearing on American future leadership in the industrial world.

"I suppose," added Mr. Schwab, "that it is only natural that our attention should have been concentrated almost entirely upon a great and quickly-delivered supply of cheap products, because our national growth has been so great and so swift. There has been nothing seen like it before in human history. And it is only proper that the United States should have credit for bringing the steel industry to a point, both as to supply and price, which made possible the present movement for the reconstruction of the world on a steel basis. The glory of that can never be taken away from us. It may be that we have not developed an art or a science as great as that of Europe, but each country must contribute to civilization in its own way and in its own time, and America has certainly broadened the foundation of the world's industrial life, and has in that way contributed to the comfort and betterment of humanity.

"We have the best supply of raw materials in the world. We have the most energetic and intelligent population in the world. There is no reason why we should not now address ourselves to the question of the highest world-standard in everything.

"We are apt to forget that the world is constantly seeking for the best, that we cannot make anything too good for the market. We can overcome competition in two ways: one is by selling cheaper and the other is by making better. There is no reason why we should not lead the world in both.

"The other day I was talking to Admiral Melville, the chief engineer of our navy, about the materials for naval boilers. My idea is a nickel steel that costs about a dollar a pound. The steel in our naval boilers at present costs something like eight or ten cents a pound. The only thing that stands in the way of non-corroding nickel steel is the cost of the material. 'No price, however great, should stand between us and the highest attainable standard of efficiency,' said the admiral. He is right.

"My own experience in the American steel industry convinces me that no standard can be too high in manufacture. There is a ready market awaiting all who have courage enough to aim at the best in material and in workmanship. There is no reason why Germany should lead us in anything. Four years ago the Bethlehem Steel Works employed only three thousand men.

"We have devoted ourselves entirely to steel making of the highest grade. Today we employ eleven thousand men. What has proved to be true in the steel industry will, I believe, be true in any other branch of manufacture."

OUR GREATEST PACIFIC PORT.

BY A. J. WELLS.

One of the great harbors of the world is that into which the Golden Gate admits the mariner. It has an area of about 450 square miles and is so land-locked that for years the early voyagers sailed past its narrow gateway. It was finally discovered in 1769, by Crespi and Portola, from the landward side, while hunting for a lost mission. In this broad haven, never visited by serious storms, the navies of the world might anchor, for here

are 79 square miles within the "three-fathom" limit. When Dana saw it in 1835, he wrote: "If ever California becomes a prosperous country, this bay will be the centre of its prosperity." For years its only commerce was the shipment of hides and tallow, and it was not until 1867 that the first steamer in the Oriental trade sailed out over the harbor bar for Japan and China. It was nearly three months before another went out, and a year before a monthly service was established. A steamer now leaves for the Orient every eight days, and four single outgoing cargoes in two months of 1904 carried in merchandise alone \$5,915,000. A cargo of one of these

floating warehouses would load more than twenty freight trains of thirty cars to the train.

The picturesque appearance of the port has suffered somewhat in recent years by the gradual elimination of sailing craft. In the days when wheat was king, the bay in summer was a-flutter with the canvas of large ships clearing with full cargoes for Great Britain and Europe. San Francisco for years was the home port

of the Three Brothers, at one time the largest sailing ship in the world. Steamcraft have taken the place of the old slow-going sailing vessels, though it is believed that San Francisco has retained more sailing ships in its carrying trade than any other large port, owing to the distance from California to many markets of the world, and the cheaper operation of these vessels on long voyages.

The water front of the port in use for commercial purposes is four and three-quarter miles, and the total length of wharfage nearly ten miles. There are ten docks 800 feet long and twenty-six docks 600 feet long, eight ferry slips for passenger traffic



CLIPPER SHIP OF THE PACIFIC TRADE.



SAN FRANCISCO WHARF SCENE.

and four car ferry slips for freight. The docks are able to accommodate at one time 220 vessels, allowing an average of 250 feet to each vessel. The older portions of these docks are built on unpreserved and unprotected piling, but there are eight cylindrical docks constructed of cement, and the older structures will be replaced by cylindrical piers as rapidly as necessary. Authority to build wharves out to a distance of 800 feet instead of 600 was secured from Washington in 1903, and ten wharves have been extended to the new pierhead line. Part of this work was necessary to provide for an increase of river steamers carrying fruit and perishable products to tide water. This is no small part of the traffic of this port, to and from points on the inland waters of the State, the smaller acreage and mixed farming and orchards, which have come in the wake of the big wheat

ranches, building up a vast traffic between the farmer and the merchant.

The rapid growth of the city of San Francisco and the cities on the eastern shore of the bay, and the increasing traffic of the port, would seem to demand another concession by the Federal Government, in the further extension of the pierhead line into the bay, to provide for the larger steamers now coming into general use. This is anticipated perhaps, by the action of the State Legislature in submitting to the approval of the voters of California the issuance of bonds by the State to the amount of \$2,000,000 for the purpose of completing the seawall and constructing such new piers and docks as may be required by the business of the port. This has been submitted and carried by a

large vote. The seawall is a substantial and permanent structure around the northeastern part of the water front as far as the new ferry building. It is now proposed to carry it south to Channel street, a distance of 4,400 feet, and build eleven modern cylindrical piers along the new seawall, having a total length of 9,600 feet. The Board of Harbor Commissioners say that "with these proposed improvements, the port of San Francisco will have the best and most complete dock accommodations enjoyed by any port in the world, and will accommodate the shipping of the port for years to come."

The facilities of the water front are under State control, and leases of wharves, etc., are made never for a term of years, but from month to month. A vessel wishing to discharge its cargo or take on freight need not hunt up a lessee to obtain permission to dock, but simply applies for a berth to the harbor-master or



ONE OF THE ORIENTAL STEAMERS.

chief wharfinger. Whatever advantages or disadvantages result from State control of the harbor and water front, the expanding commerce of the port must not be hampered by political juggling or for lack of dock room or the best machinery for handling cargoes quickly and at the lowest cost.

The vast prosperity which has come to the State for nearly a decade, and which shows no signs of withdrawal, is naturally felt in the chief center of trade. Bank clearings, savings bank deposits, real estate sales and assessed valuation of property in the city, show enormous gains, while the population has increased from 342,000 in 1900, to 485,000, as estimated from the City Directory for 1904. Great forces are behind this prosperity. The movement of population westward; the empire of climate, which draws its subjects from all lands; the development of irrigation and the settlement of arid districts; the awakening in the Far East; the inevitable commercial importance of the Pacific Ocean, and the strategic position of the port and city of San Francisco, are to be reckoned with as explaining the growth of San Francisco and the interest felt in her great harbor. When President Roosevelt said of San Francisco in 1903—"this city with a great past and with a future so great that the most sanguine among us cannot properly estimate it; this city situated upon that giant ocean which will in the not distant future be commercially the most important body of water in the entire world"—when this man of vigorous thought and facile speech said this, he but voiced the general feeling over half the world. Lord Roberts said in London that "the center of international gravity had shifted to the Pacific," and commercial calculations are no longer based on the commerce with Europe.

The whirligig of time has made the Pacific Coast the commercial front of the nation. Think of it! Of territorial expansion in the last forty years 741,754 square miles represent the Pacific Coast and Pacific Island area, and face to face with an Asiatic people, greater, perhaps, in numbers than the population of Europe, the Pacific Coast becomes the natural and inevitable base for the Asiatic trade. Annexation and expansion have drawn the attention of great captains of industry, transportation companies and men of energy and capital in all parts of the country to the opportunities offered in San Francisco.

It is part of a long history of struggle for commercial supremacy, in which the actors have been Venice, Genoa, Portugal, Holland and England herself, and cities and nations have risen or declined "as they gained or lost the trade of the Orient." To-day the shifting of conditions has placed the prize for which a thousand years have fought, within reach of the Pacific Coast States, with the port of San Francisco occupying the strategic position.

If the port is not fully equipped for handling the traffic which is coming, the explanation must be found in the rapidity with which business history has recently been made. The center of interest has shifted from the Atlantic to the Pacific with startling celerity, and the immense geographical advantages of the port and the city are bound to thrust upon it a volume of business which no experience in the past has quite measured. Thus, the distance from London to Shanghai is 10,500 miles; from San Francisco it is 5,586 miles; from London to Yokohama is 11,665 miles; from San Francisco to Yokohama is 4,536 miles. In the fierce competition for foreign export trade distance will count. In San Francisco we have the advantage over Russia. It is

more than 6,000 miles from Dalny or Vladivostock to St. Petersburg, with a less distance between these ports and San Francisco, and there is also all-water transportation. It is 6,685 miles from San Francisco to the Philippines via Honolulu, and 9,000 miles from where our Government does business with the new possession. It is only a question of a military warehouse at San Francisco in place of at Jeffersonville, Ind., and 2,300 miles are constantly being counted in favor of a change of base. The logic of facts works silently often.

In the other direction, the building of the Panama Canal will give the port increased importance. San Francisco will then be twenty-four days from New York by water, instead of sixty days, and commerce will surely take account of this. All these considerations point to San Francisco as a City of Destiny. The stars in their courses will fight for her. Meanwhile business sagacity will turn the natural conditions to profit, and the expansion of the wharf room of the port, and the facilities for handling the vast freight that is coming, will be provided, and a merchant marine created for the carrying trade between San Francisco and Asiatic ports and South American countries.

FOR DEMAGNETIZING WATCHES.

The magnetization of a watch was an occurrence which was rarely heard of a quarter of a century ago, but at the present time electrical apparatus is so generally present that



DEMAGNETIZING A WATCH.

the means of demagnetizing a timepiece is regarded as an essential part of the equipment of the watchmaker's shop. Such an apparatus has been designed and is being placed on the market by the firm of W. Green & Co., of No. 6 Maiden lane, New York. The machine is suitable for use with either direct or alternating current, which makes its application almost universal. The direct current is generally used for lighting and power purposes,

but the character of the current makes no difference in this case, the manner of conducting the operation only being slightly modified to meet the different conditions.

The automatic demagnetizer is connected to an incandescent circuit by means of the usual plug and socket attachment, and the timepiece to be treated is inserted in the hollow of the drum or coil of the apparatus. The steel tape shown is pulled out steadily and allowed to return, whereupon the watch is quickly removed from the machine's sphere of influence. This is the mode of procedure where the direct current is used, but where the alternating current is used the watch is treated while the tape is held at a point slightly withdrawn from the base.

AMERICAN MANUFACTURERS AND THE PHILIPPINES.

By HENRY D. WOOLFE.

The "bogy" raised by those who are opposed to the immediate admission into the Philippine Islands of United States products free of duty, that Spain would demand equal rights, is a "foolish bogy," because Spain cannot compete with the factories of the United States. All she can outdo us in is the common wines, that are better for consumption in these islands than the wines produced in California or any other State of the Union. Spain sends also to these islands far better conserved fruits and vegetables than those produced in the United States. And even under the same tariff they can send these goods here and compete with California, the article being better and sold at a like price. If, therefore, the tariff be so changed as to allow products of the United States to enter the Philippines free of customs duty, Spain can, without fear, be granted the same privilege until 1908, when the treaty expires. No claim can be made by any other nation on the score of reciprocity, for the treaty was not a reciprocal one; the allowance to Spain was simply an additional "sop" to the \$20,000,000 that our treaty makers so generously gave her.

May Force Congress to Act.

Here is an opportunity for the manufacturers and commercial bodies of the United States to make a stand with Congress. If that body grants the entry of sugar and tobacco from these islands into the United States either free or at reduced rates, our home products should be accorded the same privileges. This is the object sought by the Americans in the islands, who have for the past seven years labored to introduce home manufactured goods to take the place of the poor, cheap articles made in Germany and other European countries. A strong, determined effort made by the bodies indicated will surely force Congress to grant the concessions.

The advent of Americans in 1898 showed to the keen business men who came as volunteers and with the regular forces that a field existed for American goods. The liquor and beer trade was a transitory one, and the proportions it assumed can never be repeated. But in such lines as hardware, tools, locks, iron and steel, paints and varnishes Germany and England held sway, and a search all over Manila in 1898 would have been fruitless if a Yale lock or Champion forge was required. The first firm in the hardware line to import American goods to the exclusion of cheap German articles was a Chinese by name Mariano Uy Chaco, and today this firm is well known to every manufacturer of importance in the United States as the largest importer of goods in the line. Within a few years Americans started in business, and the importations in the hardware groups have rapidly increased. The cheap German articles, tools, locks, etc., imitations of American makes, still continue to be bought by natives, who look for cheap articles and do not consider quality.

Eliminate the customs duties on products of American origin and the "made in Germany" articles will disappear from the markets. The principal matters that should engage attention of American exporters are the refusals to give

credits, the bad packing of goods and ignorance of making out invoices. Importers obtain from exporters in Europe, from manufacturers without intervention of commission houses, terms that are consonant with the business exigencies of the islands. Credit varying from 90 to 180 days is given to reliable firms whose stability and standing can be ascertained after arrival of the goods at Manila, with the usual rate of interest. The exporter, manufacturer or shipper in the United States wants the money to be deposited at a bank before the goods are shipped, or, in some cases, the dollars are to drop into the cashier's drawer as the goods go out on the dray. This system of distrust operates not only against the business of these islands, but is also the reason why the United States trade with all Latin American countries has not increased.

Our manufacturers and exporters need a deal of education before their efforts to expand trade can vie with European, and especially German, rivals.

Suggestion for Trade.

If a combination of leading manufacturers in the United States would agree to provide funds to maintain traveling agents, with the Philippine Islands as headquarters, with a district embracing China, Japan, the Straits Settlements, Java and India, an immense amount of good would be effected. These agents should be able to report on the financial standing of business houses and advise as to where credit should be given; in fact a traveling Bradstreet or Dun agency. Similar systems might be adopted with advantage in South American countries and in Australia. Ignorance of business conditions may be exemplified by the fact that one firm in Portland, Ore., in response to a dealer here, wrote, "We are not aware that any customs duties are levied on American goods in the Philippines, so we did not send duplicate copies of invoices." Another firm remitted the sum of \$7.25 by means of a check on a bank in Connecticut, to cash which the local bank demanded 50 cents gold, while if a post office order had been procured the cost and trouble would have been small. Invoices, despite repeated requests, are sent by shippers without the duplicates required by the tariff law. No signatures are affixed to foot of invoices, and failure to comply with filing of duplicate invoices signed by shippers necessitates the filing of a bond that enriches the coffers of the only bond company here to the extent of five or ten dollars for each invoice. In fact, the revenue derived from the giving of bonds to produce proper invoices is stated to be of such proportions that the total receipts cover the salaries of two American employees of the company.

To add to the burdens imposed by the customs laws the revised tariff compels the declaration of invoices at ports of shipment in the United States before a collector of customs similar in form to that pursued when shipments are made from foreign countries into the United States. For each of these declarations a charge of 25 cents is made, while a consular declaration costs \$2.50. Here, again, is an instance of the anomalous status of the islands. United States immigration, shipping or other laws prevail here, and still an American firm sending goods from the United States to another American firm here is treated as if both were aliens and had no citizenship or liberty in their own country.

Truly these anomalies should impress commercial bodies and hasten the advent of free trade.

More About Packing.

Now as to packing. The condition of cases, bales and other packages received from the United States is deplorable. Glasware comes packed with iron tools; cases and boxes containing nails and screws are made of quarter inch stuff. Drills and forges have battens of such slim capacity that only the ends are standing when put on the wharf. Barrels used for beer and flour arrive in the Philippines with lamp chimneys and globes, opening up with 40 to 50 per cent. breakage. Prepared paints are packed in tin buckets, the material being so thin that the contents leak out. One case of glass alembics arrived here with every article smashed through faulty packing, but duties were collected on the goods. This case came from New York. The importer, to fill his contract, ordered the goods duplicated from Germany; they arrived without a single breakage.

In many instances packing cases are filled up with pounds of old newspapers, rags and sweepings, and naturally the importers object to pay freight on such rubbish. Instances can be cited where manufacturers, shippers and commission houses embrace the chance to send with consignments piles of advertising matter, and include the cost of freight on these to the merchant ordering the goods. European firms act on the contrary; they will send any amount of suitable literature and advertising matter to push trade, and also samples of their products free of cost to any reliable firm. Their catalogues are comprehensive; they send discount sheets and terms with all data; not like our American houses, who send catalogues without prices or discount sheets, but simply say, "We will be pleased to quote prices and discounts on application." They forget it takes ninety days before a reply to a letter of inquiry can be received, and meanwhile an order is placed elsewhere.

The practice of a number of manufacturers in the United States refusing to do business unless through commission houses is bad and results to them in loss of trade. A commission house can carry firms who have small resources, but when a house is able to arrange its own credits with manufacturers against shipments ordered, it seems to be suicidal policy to refuse negotiations unless conducted through commission houses. The houses, while charging a commission, usually receive extra discounts that are not given to the buyer, but accrue to their benefit, and this statement can be borne out by rates given by manufacturers who are alive to the advantages of direct business as against invoices of the commission houses.

The advantages of advertising in trade papers are obvious, and the wholesale dissemination of a journal like the AMERICAN EXPORTER in these islands will be of good effect. But one point should be remembered, which is that catalogues with discounts should be sent to bona fide dealers, printed in Spanish and English. Send representative business men to study the needs of the country, or, better still, let manufacturers employ a competent resident acquainted with the general needs of these islands to make out a full and comprehensive report for their use and guidance for future trade.

MANILA, P. I.

CARD CATALOGUE OF AMERICAN PRODUCTS.

In order that foreign dealers may readily acquaint themselves with the prices and other details of American goods, a card catalogue system has been established at the American consulate at Prague by our representative at that point, Mr. Urbain J. Ledoux. While the device has been available for consultation for a short time only, and as it cannot be regarded as complete in any particular, the index has been found of great value. It has been consulted frequently and has resulted in quite a number of orders, and in other instances it has been the means of establishing relations which will ultimately lead to substantial business.

A great assortment of catalogues and trade literature of a similar character finds its way to the offices of our representatives abroad, and in the case of this office these have been carefully indexed under a number of headings, and in order that the collection may be as representative as possible others have been invited by letter by Mr. Ledoux, so that while, as stated above, the collection cannot be regarded as complete, it is of sufficient proportions to have already demonstrated its value. In asking for catalogues Consul Ledoux says that catalogues, prices current, discount sheets, etc., must naturally be so arranged that anybody seeking information can find it at once. Catalogues without prices or discount sheets are useless; moreover, the weights and measures should be reduced to the standards adopted in the country of destination. Lists of references should also be added.

In order that the filing can be done effectually, it is necessary that parties sending printed matter should at the same time advise our consuls regarding the various specialties they handle.

BOOK OF SHIPPING INSTRUCTIONS.

The regulations and forms followed in the interchange of commodities between the nations of the world are manifold and varied. It might be said that they are perplexing. It is essential to comply with the requirements to the letter, the slightest deviation therefrom causing embarrassing and expensive delay. To keep these matters at one's finger ends with strict regard to the details is impossible except where the business done is of sufficient proportions to warrant special attention being given to the subject. For the purposes of persons engaging in international trade the "Exporter's Encyclopedia" is an annual, the second edition of which has just made its appearance, corrected up, a few weeks ago. It is published by the Exporter's Encyclopedia Company, No. 65 Duane street, New York. It seems to contain all the information necessary for the shipment of goods, giving the authentic shipping instructions in detail for every country in the world, list of consuls of the different nations stationed in New York, consular charges and regulations, shipping routes and the regulations governing each, names and offices of all transportation lines sailing from the principal ports of United States arranged separately for each country, together with their ports of call, points for which bills of lading may be obtained, as well as tables of general information which are likely to be of value to shippers.

AMERICAN MACHINERY IN THE PHILIPPINES.

BY FRANK L. STRONG.*

In spite of adverse conditions great progress has been made in the introduction of American machinery in the Philippines. One result of finding a clear field with practically nothing modern is that the machinery now in operation is of the newest improved type, and the best adapted for its purpose. Under appropriate heads some of the leading lines will be briefly touched upon. Many others could be mentioned.

The navy department early imported tools from Cavite, and is constantly adding to the outfit, having now a creditable line of machinery for the repair of war vessels. Closely following, the army provided its own shops in Manila, all well fitted. The extensive fleet of coast guard vessels required its own shops, and Engineer's Island, at the mouth of the Pasig River, was devoted to that purpose by the Philippine Commissioners. Aside from the great shop buildings now completed, others are contemplated, which will make one of the most complete plants in the Orient. A few months ago a marine railway was installed, of the most approved design in the world and of American manufacture. Vessels of 1,500 tons are drawn from the water and placed high and dry on a working platform in fifteen minutes. A similar marine railway is now being erected at Cebu, and machinery of the most approved American types is now in transit for equipping the expensive shipbuilding and repair shops connected with it.

The great \$1,000,000 floating dry dock ordered for the navy at Olongapoo will soon reach the islands, and will readily dock the largest vessels in the world. Fully equipped shops will be erected in connection with it.

The old private shops in Manila and elsewhere have felt the new spirit, and many tools have been installed and methods of work changed. Inquiries for shop tools are coming in from various parts of the islands slowly, enough to indicate that the new methods are steadily making themselves felt. The leading manufacturers of this class of machinery are represented here, and without the delay of correspondence with their home offices in the United States purchasers can readily make their selections.

Very early in the occupation an enterprising American ordered an up-to-date sawmill and various machines for converting the boards into the finished product. His business has proved very successful, and many large contracts for public and other buildings have been filled.

Following soon after other mills were erected, and any class of mill work can be had, including furniture. Many mills have been placed in other parts of the islands, but the industry until recently has been heavily handicapped by unsatisfactory forest laws. Millions of feet of American lumber are constantly being imported in this, a country teeming with forests. Even Borneo is successfully competing in this market. These conditions will undoubtedly be changed soon.

The wealth of the Philippines, as with most other countries, lies in its soil. No more fertile land lies under the sun; and it is doubtful if one can be found elsewhere where less has been done along modern lines. The Philippines

Commission has wisely expended large sums to instruct the people. Large farms have been set aside for experimental purposes.

Steam plows have been successfully introduced in these farms, the two on the Murcia hacienda having recently finished plowing 1,000 acres. Reapers, mowers, rakes, harrows and other machines are found on these farms, and purchases are being made by interested farmers. Last season the steam thresher at the Murcia hacienda was sent about the adjoining country and threshed some 40,000 bushels of rice.

The prevailing custom of dividing rice fields into very small units prevents the use of steam plows and harvesting machinery, but with the greatly lessened cost of production as shown on the Government farm, the modern plan will soon prevail. Furrows 2 miles long are being accurately and quickly plowed at Murcia, harrowing and seeding follow as rapidly, and later the crop is cut and threshed by machinery.

Plows and other implements drawn by animal power are gradually being introduced, and will ere long replace the crude home-made affairs.

Almost destitute of common roads the work undertaken directly or under the auspices of the Government has been a stupendous one, and is being vigorously prosecuted. The highest grades of American machinery are being freely used.

At the Binangonan quarries the Government has two massive rock crushers capable of crushing over 100 tons of rock per hour. This rock is largely used for improving the streets of Manila, and is of the hardest quality. Other crushers are elsewhere in the islands providing solid ballast for the great Government roads.

Owing to various causes the mining industries have scarcely opened as yet. Much prospecting has been done by private parties, and the well-equipped Government mining bureau has added greatly to the information obtained from Spanish sources. There is every indication that gold-bearing quartz deposits exist in paying quantities, and the importation of stamp mills and kindred machinery will soon be freely made. The deposits of base metals are very large, copper especially being found in great quantities, and it remains only to construct roads to present inaccessible fields to develop an industry in which much machinery will be used.

The introduction of ice machinery proved a very successful innovation, and the small plant sent over at the time of the first occupation has expanded, and other ice-making and refrigerating plants have been in successful operation.

COAL IN SPITZBERGEN.

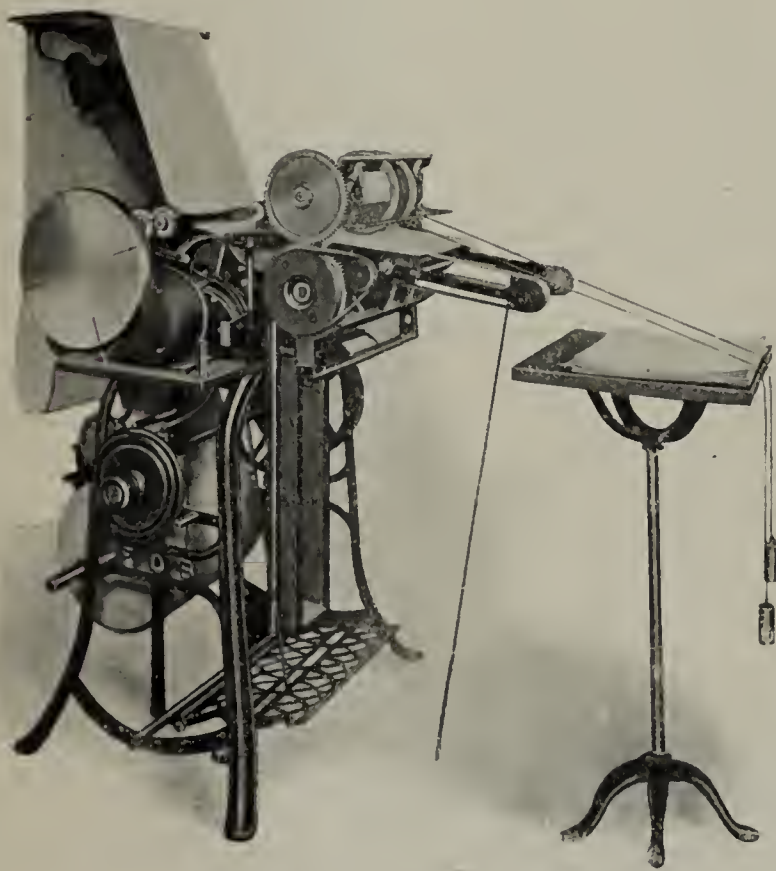
According to a recent report coal mining has been commenced on the west coast of Spitzbergen. The discovery of coal is one of the results achieved by the Swedish expedition sent out to study the geology of that country. About 200 tons of coal were mined this summer, of which 90 tons were taken by a Spitzbergen whaling company. The expense of mining is considerable, as it must include strong bulwarks for protection against ice. Freights are high, as ships desiring to carry coal must go in ballast to Spitzbergen.

* Based on an article prepared for the *Daily Bulletin*, Manila.

Newest Office and Counting-Room Conveniences.

At a recent exhibition of the latest office appliances there was shown an addressing machine which was turning out wrappers bearing the address of the sender as well as the addressee, both impressions being made at the same time. The papers were cut as they were printed, and seemed to be flying from the machine at a whirlwind rate. This was the Belknap addressing machine, and it was explained that it would handle as well envelopes and circulars which were to have the name filled in at the top in the same manner as a letter. The name, address and business of the sender were stamped in red ink in the proper place to the left of the sheet, and to the right was the clear impression of the name and address of the addressee stamped in a bold and clean-cut manner. These letters were formed of a series of dots by which the letter was so clearly outlined that it could be discerned at a glance.

In the operation of all machines of this type a box of stencils is properly placed in such a manner that they are auto-



HIGH SPEED ADDRESSING MACHINE.

matically fed one at a time to the place where the printing is done. The cards pass between two revolving roller pads, the lower one of which is of rubber and takes the ink from the fountain roller. Then the two rollers come together and the ink is forced through the stencil. The card is then pushed into the receiving box and the next card brought into position for addressing. After the box of about 500 names is run through the machine the stencils are filed away ready for the next issue.

The machine is operated by either hand power or electricity. The average feeder can turn out about 20,000 pieces

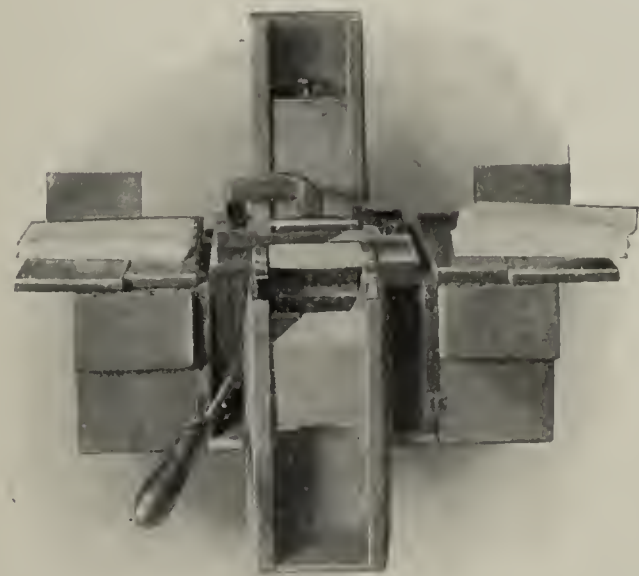
a day using hand power, while with the aid of electricity the output can be increased by half that number.

A low-speed machine, fed by hand and driven by foot, answers a great many purposes, but where the business has outgrown the capacity of the machine it is simply necessary to equip it with an automatic envelope feeder, which more than quadruples the capacity. It will carry any of the commercial sizes of envelopes, and its capacity is from 60,000 to 75,000 pieces per day, handling cards or envelopes. A fan motor of one-tenth horse-power capacity is sufficient to operate this combination.

The machine doing the work referred to in the introduction of this article was equipped with another feature, and that is known as the automatic wrapper attachment. As

stated above, this attachment addresses the wrappers, prints the return card and cuts the paper in any desired size at the rate of from 60,000 to 75,000 per day.

The company which manufactures the machine undertakes to supply the



ADDRESSING MACHINE FOR SMALL LISTS

stencils at a trifling cost, but where the list is of any proportions and where the names are changed constantly, it is desirable to have the means at hand for performing the changes without the necessity of sending out of the office. A complete outfit, such as is furnished by the company, includes a typewriting machine equipped with paper-piercing points by which the stencils may be made as rapidly as they can be written on the machine. A smaller machine for making the stencils is supplied, suitable for use when the stencils are required in smaller numbers.

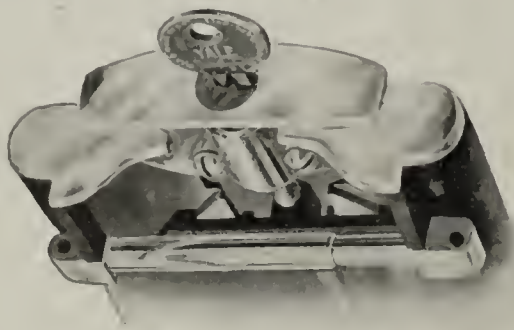
It is claimed that it would require a force of twenty nimble-fingered clerks to keep pace with this addressing machine in the matter of turning out envelopes and wrappers.

Loose-Leaf Ledger Lock.

For the past twenty years the loose-leaf ledger system has fast been gaining ground, and to-day it is absolutely necessary to the handling of business. Up to the present time no locking device which has a positive action on the mechanism has ever been attached to loose-leaf binders which would give to the bookkeeper an assurance that the bulk of

his leaves are inviolate and subject only to his personal manipulation.

Recently there has been patented by Mr. Thos. A. Glendenning, of New York city, and assigned to the William Mann Company, of Philadelphia and New York, a Yale lock which connects with the actuating mechanism of this company's Mann ledger (interchangeable leaves) which locks it, giving the same



sense of security to be had when one snaps the Yale lock on the home or office door. The lock which is used is of the latest paracentric type, the lock itself being only recently patented.

The purpose of this locking device is to make it impossible for unauthorized hands to remove or replace leaves in loose-leaf accounting record. Every combination of circumstances can be accommodated by the use of master keys and dual locks, and it is possible to so lay safeguards around important records that they become more secure than in bound books. For instance, by the use of a lock in each end of a binder it may be made impossible to unlock it except in the presence of two people who are provided with the separate keys.

The master keys have many uses, but they are usually used to give executive officers access to such locks or series of locks as may be necessary.

Imitation Typewriter Letters.

The Dupligraph is claimed by its manufacturers to be the highest development of the process of producing imitation typewriter letters. That is to say, a person receiving a letter which has come from the dupligraph is apt to think that he is in receipt of a letter which has been written for him alone, whereas it is one of many thousands dashed off by a manifold process which imitates all the characteristics of the typed letter. A very old deceit was to have the body of the letter printed in type imitating the impression of the typewriter and then to fill in the name and address such as usually appears at the head of a business letter. This could be easily detected, for, as a rule, there could be generally noticed some difference in the ink used in making the different impressions. Or if it had been contrived to match the ink nicely, by turning the sheet over and examining the back one could see in an instant that where the type machine had been used some of the characters, and especially the periods, cut through the paper, while that part of the paper that had been impressed in the printing press was without a break of any kind.

In the construction of the dupligraph this has been all taken into account, and the name and address of each letter is printed at the same time and with the same ink as the body of the letter, this introductory inscription being fol-

lowed in all cases by "Dear Sir," "Gentlemen," or "Madam," as may be appropriate for the particular letter.

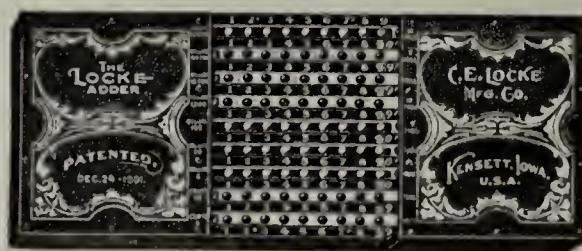
This trade deceit is accomplished by the use of a machine, to all intents and purposes a job printing press, making use of rubber type, which is set up and placed in the form in somewhat the same manner as ordinary type. This refers to the body of the letter. The name and address as well as the greeting, "Dear Sir," "Gentlemen," or "Madam," is prepared in the shape of a chain which passes through the press, changing at each impression. The matter of setting up the type for this machine is not a difficult task. A knowledge of the printer's art is not required, for the type are placed in holders which are placed in a letter form and then put in the dupligraph. Such work can be done by any intelligent member of the office force. Where it is desired to vary letters slightly to meet different classes of trade, it is a simple matter to make such changes without greatly disturbing the form and to proceed with the printing without much delay.

It has been said that the type is of rubber. This is not strictly true, for periods, commas and similar points are of metal, with the result that these pierce the paper in exactly the same manner as such characters do when the typewriter is used. The speed of this machine is from 800 to 1,200 per hour.

A Simple Adding Machine.

There are several calculating machines designed for the use of bookkeepers and others, and there is no doubt but that these are used with great economy of time and gray matter in the manipulation of figures. One of the simplest and most economical of these is the Locke adder, which is a tiny affair taking up almost no room on the bookkeeper's desk and always ready to add up a column of figures for him.

The machine consists of a frame or casing containing a series of parallel bars, the central portions of which are exposed, while the ends are covered by plates. There are two kinds of bars, the stationary guide bars and the sliding bars. The guide bars on their upper surface have the numerals 1 to 9 equally spaced in their regular sequence from left to right. Between the guide bars, and adapted to move from right to left, or left to right, are the sliding bars. Each of these



bars is about twice as long as the exposed portion of the guide bars, and has on its upper face a series of projections or

knobs, spaced at the same intervals as the numerals on the guide bars. When these bars are moved to the right or left the figures indicating results appear in the U-shaped openings at the right of the operating section. The result figures are read down, or toward the operator, and are in plain sight, yet so placed that there is no danger of confusing them with the numerals on the guide bars.

Different sliding bars represent different orders in the decimal notation—the lowest or nearest slide being units, the next tens, the next hundreds, and so on—the top bar

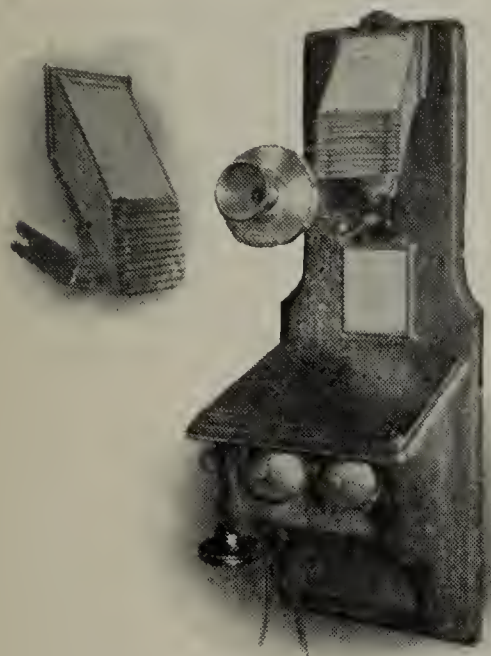
being hundreds of millions. Guide words and figures on the plates, opposite each bar, make everything plain to the beginner.

To operate the machine it is only necessary to place the fingers upon the knobs opposite the proper figures and move to the right or left until stopped by the edge of the plate. If a knob is on the dark half of the bar it is moved to the left; if on the light half it is moved to the right. The distinction between the two halves of the bars is unmistakable, and after a little use moving to the right or left becomes entirely automatic and is done unconsciously.

The size of the adder is $4 \times 10 \frac{3}{4} \times 7-16$ inches; the weight is about 12 ounces.

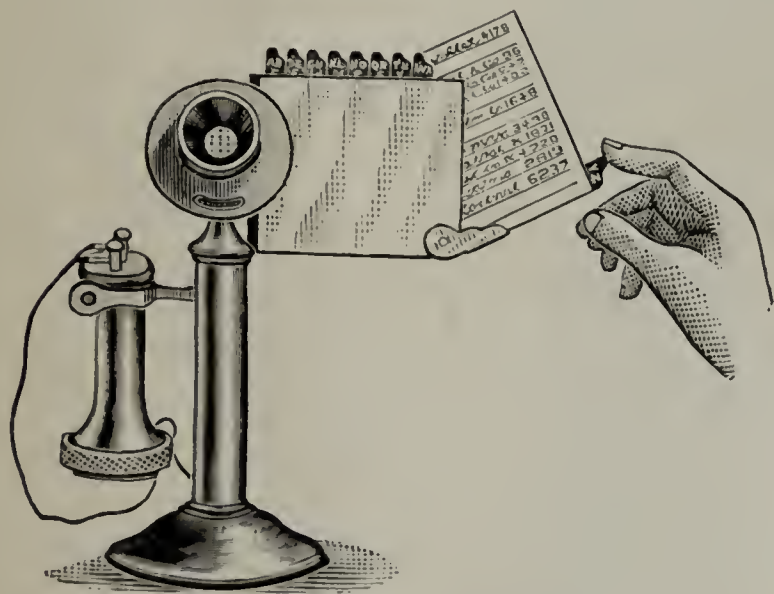
Card Index on the Telephone.

The card index seems to be universal in its application, and one of the most recent uses to which it has been put is that of a telephone directory. In this capacity it presents an exceedingly compact arrangement by which a generous amount of telephone information is at hand under the very



eyes of the person at the instrument. There are quite a few of these devices recently placed on the market. The Referphone is one of them, and it consists of a series of small metal-bound cards, mounted one over the other in such a manner that the index letter on each is plainly visible. It is the work

of but a second to turn these leaves over to the proper place and the desired number is constantly before the eyes of the person making the call until the call has been answered and



AUTOMATIC CARD INDEX.

business transacted. In calling up an unfamiliar number it frequently happens that one is obliged to consult the book

several times for one reason or another, and this is an annoyance which is avoided with the use of such a device as here described. The Referphone is adapted for use on any kind of instrument, either of the desk or wall type.

The Automatic Card Telephone Index is a variation of this idea, and what is claimed as an important feature for this contrivance is the fact that the names of one's customers and friends are always at hand and yet concealed from view. The cards in this case are contained in a small box-like shield, which protects them from the gaze of the curious and from the action of the air and dust. The cards are very readily removed for the purpose of making the proper inscriptions on them, but when it is desired to consult them for the purpose of making a call it is done merely by placing the finger on the card indicated by the index letter, and it is withdrawn far enough to consult, and upon removing the finger the card will slip back into its place by means of a spring.

Paper Folding Machines.

There are several lines of business in which for one reason or another the circular seems to answer the purposes of advertising to a very great extent, and where these sheets are sent out in great quantities, as is often the case, the expense of folding is one of the most serious items of the cost of this character of advertising. Another consideration is the amount of space which is required to accommodate the tables and the help at this work. In the crowded office buildings this is a more serious item than would be supposed by those who are not called upon to pay office rent. To meet this demand a machine has been invented which will perform the folding operation at a trifling cost and at a speed which would defy the fingers of the most adept folders of the human kind.

Such a device is the product of the A. B. Dick Company, of New York, N. Y., and Chicago, Ill. This company makes two machines for this purpose, each of them making a different character of fold. The operation requires no special knowledge, and an office boy of ordinary intelligence can soon manipulate one of these machines at great speed and do the work which heretofore has required many persons.

No special furniture is required and the apparatus is no larger than an ordinary typewriter. It can be readily lifted from place to place, wherever it may be the most convenient point for its manipulation. They will handle any character of paper as far as surface or thickness is concerned. What is known as the No. 1 machine is 17 inches high, 19 deep and 16 high. It will fold sheets ranging in size from 10 by 16 inches to $4 \frac{1}{2}$ by 10 inches. It puts the sheet through two operations, giving the paper either three or four parallel creases. The speed will vary from 6,000 to 7,000 sheets an hour, and the machine is suitable for handling circulars, price lists, railroad tariffs, time tables, steamboat sailing lists, statements and similar sheets.

The second machine is 16 inches high, 18 deep and 20 high, and has a variety of accomplishments in the folding line which is arrived at by the use of different attachments. This machine will make the ordinary three-fold ready for 6 or $6 \frac{1}{2}$ envelopes. Then it makes a half fold and two re-

verse folds. Still another performance is to fold the sheet into quarters. These folds are such as are usually made in polite stationery.

Coin-Counting Machines.

The counting of the day's receipts is a very essential task in the office of all business concerns, and in the case of department stores, traction companies, amusement parks and similar places where there is much small change, the operation is a monumental one and one which is thoroughly detested by all who are compelled to take any part in it. It is, therefore, only natural that the results under these circumstances should be more or less open to question. It has therefore been necessary to resort to mechanical means to have the counting operation performed with reliability.

There are several machines purporting to do this, and what might be regarded as representative of its class is the coin-counting machine devised by J. M. Johnson, formerly of the United States Sub-Treasury. The only hand work necessary with the use of this machine is that of sorting the coins. As this is done the coins are thrown into the hopper and guided into the head of the machine, and as the pieces are passed through this part of the machine counterfeits or mutilated coins are detected, and before the work can proceed farther it is necessary to remove the spurious piece.

A cyclometer attachment in plain view of the operator records the number of coins counted, and registers up to 100,000, thereafter automatically repeating the count. The adjustment is such that the cyclometer will not register except when a coin passes through the machine, hence there is no chance for mistakes even though the crank should be given a turn after the coins are all counted. The gearing is such that coins are counted at the rate of six coins to each revolution of the crank.

The very latest improvement in this coin counter, and one of its best features, is an adjustable attachment to the cyclometer which stops the machine after a given number of coins have passed through it. This relieves the operator of constant watching of the recorded count, and becomes a perfect checking system whereby errors are rendered positively impossible.

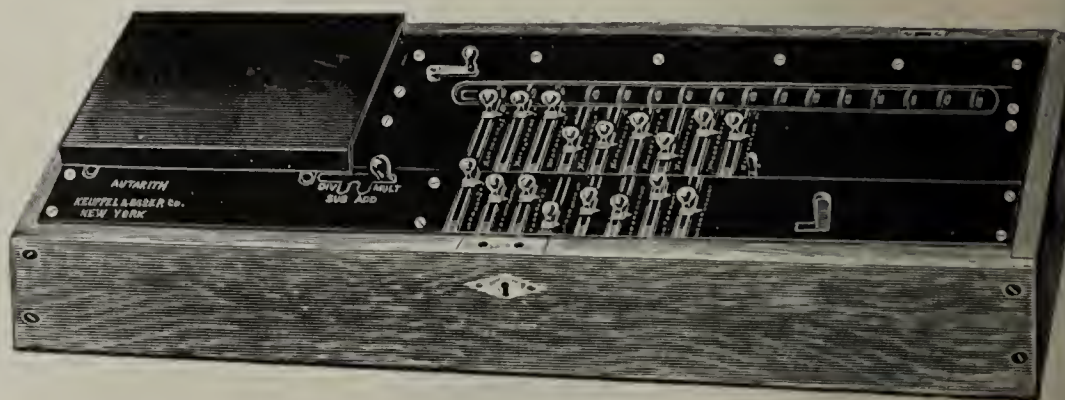
The person who does the counting sits at a table of ordinary height with the machine on the table. With his right hand he turns the crank, and with his left he feeds the coin into the counter. As the coins pass from the counter into the bags they may be tied with the assurance that the count is correct.

Where it is not desired to run the coins into bags, but to put them up in wrappers convenient for handling, paper cartons are provided for this purpose—a great improvement over the hand-roll wrapper. These cartons are attachable to the counter, and as fast as filled may be sealed and stacked up.

A separate head is furnished for each denomination. When a change is made from one kind of coin to another, it is a simple matter to change the head of the machine and to go on with the work of counting with little interruption. The capacity of the machine ranges from thirty to sixty thousand coins per hour.

Calculating by Machine.

There are several calculating machines on the market at the present time, each one having some individual characteristics and particular points of merit. As a rule these machines are built with a keyboard bearing some resemblance to the typewriter, but one which is built on entirely different lines is the Autarith, the invention of Alexander Rechnitzer, of Vienna, but perfected and developed by the Keuffel & Esser Company, of New York. It is said that the sum of \$90,000 was spent in three years on this piece of apparatus, and in that time only three machines were built. All the mechanical assistance which is needed with the Autarith is to indicate, by means of the pointers or numeral wheels, the problem to be performed. A movement of the single controlling lever then sets in motion an electric motor, and all further movements are effected automatically, the carriage advancing step by step through the successive stages of the calculation and returning upon the conclusion to its initial position, leaving the result indicated by the numeral wheels.



MACHINE MATHEMATICIAN.

or pointers, as the case may be, depending upon the operation performed.

Probably the most interesting function of the Autarith is dividing. In this operation, which amounts to a successive subtracting, the machine closely simulates the mental operation in "trying out" the quotient, and appears to deliberate upon the correctness of the successive stages of the operation. Having repeatedly subtracted the divisor until it is no longer contained in the dividend, it continues to do so once more, when, finding this to be incorrect, it automatically corrects itself by adding the divisor once. The machine then proceeds with the next place nearer units, exactly as one would bring down another figure to the remainder in arithmetically performing long division.

The analogy to the mental calculation is in this case so striking that one will not be surprised that the inventor states he was led to the construction of his machine by considerations which were originally of philosophic interest only.

The operation of the Autarith is simple, a single lever sufficing to control it. The varying problems are indicated by means of the pointers, or on the numeral wheels, and upon throwing the starting lever into position the carriage advances, performs the calculation, and, when through, returns to its initial position, disconnecting the motor at the end of its trip and bringing all parts to rest.

As to capacity, the present style of Autarith will automatically multiply any two numbers from one figure each up to eight figures each, yielding a product of sixteen places.

In division it will automatically divide any number of sixteen figures by any number of eight places down to one figure by one. Numbers of eight places can be added or subtracted. The numeral wheels on which the results are read are placed close together to enable one to read the numbers rapidly. The pointers are conveniently placed as well, and a single turn of the canceller sets all numeral wheels to zero. The necessary power to run the small electric motor is readily obtained from an electric light socket.

Sixteen hundred separated pieces of metal must be put together to form the intricate mechanism of this iron brain. Four hundred of these pieces are each made differently in structure and each serves a different purpose. Yet all the sets of gears and mechanisms are locked in their turn when another set is in action, thus preventing slips or shifting, while the carriage is held by guides and rollers.

Machines for Cancellation.

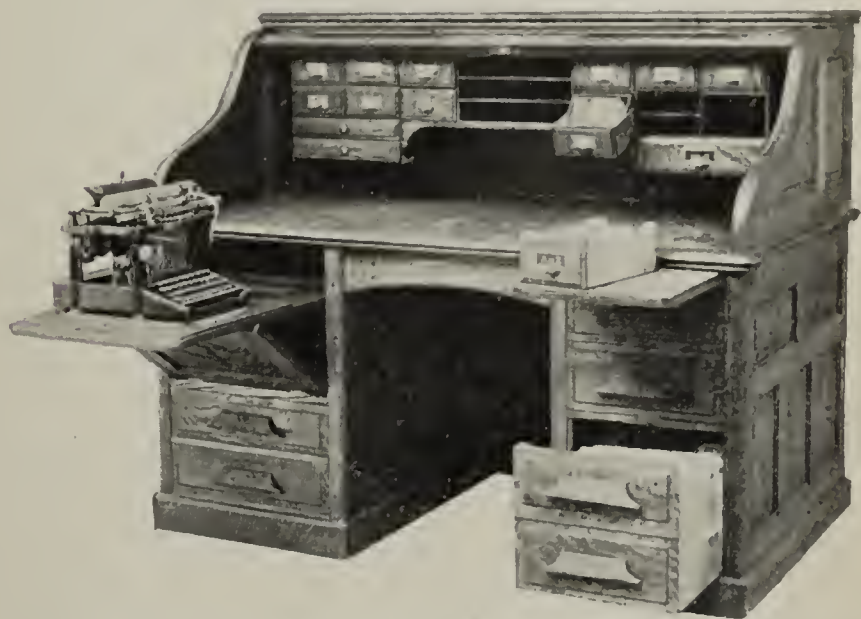
A machine which was designed solely for the purpose of cancelling stamps and postmarking letters as they pass through the post office has developed into a very important piece of office and counting room mechanism. This is known as the Hey & Dolphin Cancelling Machine, and is made in two styles, one driven by electric power and the other by hand. While the principle involved in the design of the two machines is the same, the details of construction vary to meet the demands of somewhat different work. The machines are suitable for use in all offices where there are checks and other papers to be cancelled, and have been found of great service in banks and similar institutions. The hand-power machine has a capacity of from 12,000 to 15,000 pieces per hour, while that of the electric apparatus is from 40,000 to 60,000 pieces per hour. The machines will accommodate any size of sheet within reasonable limits, and are supplied with an attachment by which the pieces are counted as they pass through the machine.

Desks for the Office.

Grand Rapids, Mich., has long been recognized as a very active furniture-manufacturing center, and one of the busiest establishments in that vicinity is the plant of the Gunn Furniture Company. This plant was organized some years ago to manufacture folding beds, and achieved an enviable reputation in this line, but the demand for furniture of this character became somewhat irregular, and the company took up the line of medium-priced desks, both roll and flat top, and immediately established a reputation for the excellence of its product. The truth of this statement is attested by the rapidly increasing orders, particularly from abroad. The line comprises 250 different styles, from the low-priced flat-top desk to the heavily carved banker's desk.

About five years ago W. S. Gunn, president of the company, invented and commenced the manufacture of a Knock-Down Sectional Bookcase. This article was well received from the start, because of the means afforded for economical shipment, allowing the furniture to be set down in foreign countries at a very low cost for transportation. Up to that time the bookcase was made in one piece, and the result was an unsightly display of bare shelves, but with the sectional, the parts may be added from time to time as needed.

The factory of the company is located on a five-acre lot about



DESK WITH TYPEWRITER FEATURE BY GUNN MANUFACTURING COMPANY.

one and one-half miles from the center of Grand Rapids. The station is known as Fuller, located directly on three important railroads, which affords this firm unusual shipping facilities. All three of the railroads referred to maintain agents at this point, and they are kept busy all day long taking care of the shipments made by the Gunn Company. The factory has a present capacity of \$600,000 worth of goods. This product is being increased con-



SAMPLE OF THE MOON DESK COMPANY'S PRODUCT.

stantly, and the company will soon be turning out \$1,000,000 worth of goods bearing the Gunn stamp.

Another desk which is of interest to the export trade is shown herewith, the product of the Moon Desk Company, of Muskegon, Mich. This has overhanging front, raised panels all around and between pedestals, wide pedestal drawers, centre drawer with flat-keyed lock, double writing bed, heavy pilasters and roll-top arms. The drawers are varnished inside, have movable partitions, with a deep drawer partitioned for books. It is of golden oak finish, rubbed and polished. The pigeon-hole case is supplied with twelve pigeon-hole boxes, card-index drawer and letter-file drawer. Its dimensions are: 66 inches long, 34 inches wide and 50 inches high.

Typewriter and Calculator.

It has been long recognized that an adding attachment capable of totaling typewritten columns of figures as the work of typing proceeds would be a most valuable attachment to the typewriting machine, and such a combination has been effected in the arithmograph which has been recently brought out. It is the invention of John T. Howieson, who is eminently qualified for the work, inasmuch as he is

writer, and so connected to the numeral keys as to add numbers intended to be totaled as the work proceeds, while remaining unaffected by the use of the same keys in writing dates, quantities and other figures not meant to be totaled.

The arithmograph stands normally operatively disconnected from the typewriter, which can be used exactly as if the arithmograph were not there. By slightly shifting a small bail, nine connecting links are thrown into engagement with hooks upon the nine numeral key levers of the typewriter, which throw the arithmograph into action when the numeral eyes are depressed. Reversing this movement will again disconnect the machines.

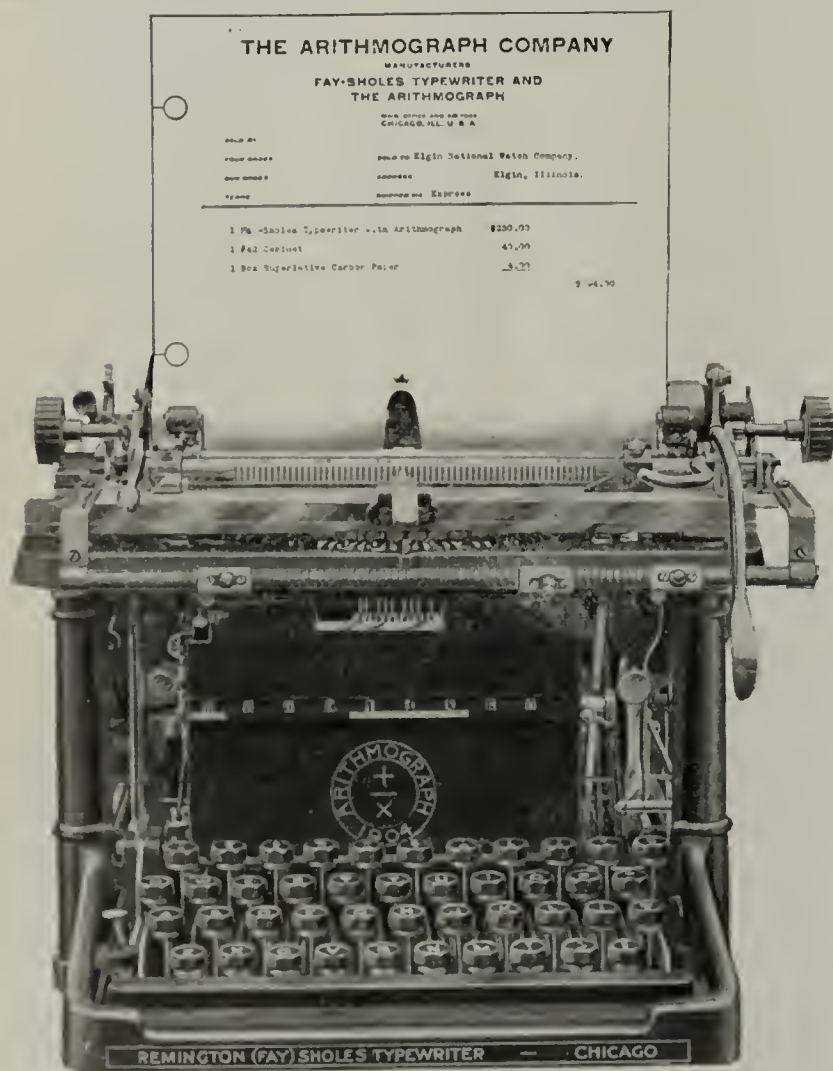
It is evident that the adding mechanism must be so constructed that the adding wheel, actuated by striking any numeral key, shall correspond to the decimal place occupied by the figure printed. This selection is effected, for each column to be totaled, by a movable cam attached to the carriage, which can be set at any desired point on the paper scale. This cam, as it passes the printing point from right to left, depresses, one after the other, a series of tripping levers, one corresponding to each adding wheel, which, as depressed, cause the figures printed to be added into the total shown by the adding wheels. Before this cam reaches and after it passes this series of levers the adding wheels remain entirely inactive, so that dates, quantities and other numbers not intended to be totaled produce no effect whatever upon the adding mechanism. The aforesaid cam can be thrown up so as to clear the tripping levers, which produces a like effect, namely, that the adding mechanism remains undisturbed.

To clear the adding mechanism a small thumb wheel is provided at the right of the arithmograph, one turn of which restores all adding wheels to zero, ready for another totaling.

By providing the bail upon the carriage with two or more cams, as many columns of figures can be added crosswise (that is, along the printing line), and the total can be printed at extreme right.

The arithmograph is provided with nine adding wheels, the same as all standard adding machines. Two columns can be added at once, provided one does not require more than four and the other more than five decimal places in the total. By the use of additional adding wheels more decimal places can be allowed for.

Experience developed the fact that operators accustomed to a light short touch upon the typewriter often fail at first to follow the numeral keys to their full depression, which is necessary in order to register numbers as large as, for instance, "8" and "9." Neglect to do so is apt to register lower numbers, such as "6" and "7," and it is therefore absolutely essential to prevent carrying such errors into the total registered by the adding mechanism. Mr. Howieson has provided a most ingenious device for locking all the numeral keys, if any of them should by any chance be only partially depressed, so that it is impossible to depress another key and go on with the work until depression of the former key is completed and the registration made accurate, after which the work can proceed without further interruption. If two keys are accidentally depressed at the same time, both become locked and the depression of both cannot be completed. To provide against this difficulty an unlocking key is placed



TYPEWRITER AND ADDING MACHINE.

equipped with an experience in a typewriting manufactory and afterward in a computing machine factory. The device is shown herewith, connected with a well-known typewriting machine, and at the present time the attachment has been made for use on this machine only, but it is announced that it will be but a short time before it will be adapted to any of the leading makes of machine. The arithmograph consists of a series of adding wheels, and their driving mechanism, compactly stowed in a dust-proof case, so small and light as not to materially increase the size or weight of the type-

upon the arithmograph, which releases all key levers at once. A very few hours' practice upon the machine familiarizes the operator with the character of touch necessary when adding, which (though much lighter) somewhat resembles the touch of the shift key used upon shift key machines, and applies only to the numeral keys, the rest of the machine being entirely unaffected.

Subtraction can be accomplished, as in the standard adding machines, by the use of complementary numbers, a method which is quite familiar to accountants who make use of machines.

Fountain Marking Brush.

The fountain pen has long since established itself as an indispensable office adjunct, and now there are the fountain marking brush and the fountain stencil brush, which are pushing their way for patronage. The value of such a device in any establishment where there is any amount of shipping will not be denied. The marking brush is shown herewith, and when its appearance is compared with that of the ordinary marking outfit, with its awkwardly-shaped can, which is likely to be upset on the slightest provocation, the convenience of the new device cannot but be recognized.

These brushes are much the same as the fountain pen in their construction and use. To fill barrel or cylinder unscrew cap A. To open valve and turn on flow, hold brush firmly in left hand at section B, and with right hand push barrel up, which allows flow and lengthens brush. To close valve pull barrel back, shortening brush. Flow can always be regulated by means of valve. Keep valve closed when filling to prevent any possibility of leaking. To clean brush remove cap A, open valve and allow water to run through. When not in use the brush is protected by cap C. This will always keep brush clean and prevent it from becoming dry or hard. When brush tip is worn out it may be readily removed from socket and new one adjusted.

This same idea has been applied to the construction of shoe brushes.



SOFT RIVETS FOR MAKING MENDS.

A tiny pin hole in the bottom of a kettle or pan puts the utensil as completely out of use as if it had been run over by a railroad train. It is true that sometimes the damage may be remedied by the use of solder, but this is an operation which can be performed only by some one more or less expert in the use of tools. To meet such emergencies a soft metal rivet has been placed on the market by a firm of Batavia, N. Y., by the use of which a mend of the character referred to may be made by anyone who can wield a hammer. An assortment of these rivets comes in a box accompanied by a small reaming tool. With the aid of the latter implement the hole is made round and of such

a size as to accommodate one of the rivets. This being placed in a hole, it is flattened by a few blows of a hammer and the break is thus effectually sealed.

SOUTH AMERICA MORE PROMISING THAN THE ORIENT.

Hon. Chas. F. Scott, member of Congress and a well-known newspaper proprietor of Kansas, who accompanied Secretary Taft to the Philippines, sends the AMERICAN EXPORTER the following views as to the relative importance of the Orient and of South America as purchasers of American goods:

"We Americans do not seem to have the knack of dealing with the secretive and suspicious Orientals. We are altogether too brusque and business-like. We do not know how to sit down and loiter over a cup of tea for an hour or two in order to drive a sharp bargain.

"For these and other reasons it seems to me that South America offers a more promising field for American trade. There is a great continent whose development is just beginning and whose products are such as to make the people our natural customers rather than our competitors. We sell them almost nothing in comparison with the number of things we buy from them, and this certainly must be because our manufacturers have neglected their opportunities in that direction. In my opinion we had better look to the South than to the East."

AMERICAN TRADE WITH THE PHILIPPINES.

In a letter to the AMERICAN EXPORTER, brought out by the article in the November number on "Opportunities for American Goods in the Philippines," Hon. Ebenezer J. Hill, of Connecticut, a member of the Ways and Means Committee of the House of Representatives, and who recently visited the Philippines with Secretary Taft, gives his views as to what he thinks should be done to develop the trade of our insular possessions. Mr. Hill says:

"I am thoroughly convinced that the proper course for us to pursue in the matter is to make trade relations between the Philippine Islands and the United States just as free as they are between Hawaii, Porto Rico and the United States, and I can see no reason why this should not be done.

"It seems to me, after two visits to the Philippines and a personal examination of conditions in the islands, that there is nothing whatever for any industry in the United States to fear from the Philippines.

"I am confident, moreover, that if Congress shall enact into law the measure proposed by the War Department, namely, that in consideration of the reductions in the tariff therein provided (that is, the admission into this country free of duty of all Philippine products, except, perhaps, sugar and tobacco, and these at a rate not higher than one-quarter of the Dingley rates), American machinery and other goods be reciprocally admitted into the Philippine Islands free or practically free—such a provision of law can be enacted now without any reference to the Spanish treaty, for it would be impossible for Spain or any other country to give the same consideration that we give for such privileges."

TINY TYPOGRAPHIC NUMBERING DEVICE.

In the printing of tickets, tags and similar articles which are to be printed and numbered at a single impression, the space allotted to typework is frequently quite limited. The usual stock machine by which this numbering is accomplished is rather large for use in crowded forms, and where, for lack of room, they cannot be utilized, "printing double,"



with its accompanying disadvantages, is necessitated. The stock must be of accurate and uniform size and the feeding must be perfect to attain good register when the "turn" is made. In printing and numbering large orders it is often

desired to run two or more forms in a single chase. In such instances the capacity of the press is reduced one-half when forms are "printed double."

The Wetter Numbering Machine Company, Nos. 331-341 Classon avenue, Brooklyn, New York, anticipated the present demand for a durable typographic numbering machine of a small size, which resulted in the perfection of the "Midget Wetter." This new machine is $\frac{3}{4}$ by 1 $\frac{15}{16}$ inches in size; it is made entirely of steel, has a low plunger, and is the smallest stock machine marketed by any manufacturer. It is made in two sizes—five wheels, with title figures (Model 115), and six wheels, with gothic figures (Model 116).

No 12345

MODEL 115—5 WHEEL.

No 123456

MODEL 116—6 WHEEL.

In ordinary cases of marginal numbering the "Midget Wetter" may be arranged to show less than twenty-four points of white space between the numbers and the surrounding type.

Its low plunger has many advantages. It permits of perfect and uniform distribution of the ink when all of the number wheels are in action, thus assuring a sharp impression when the press is running at high speed.

NEW YORK'S FOREIGN TRADE.

The New York *World*, in a recent elaborate article on the growth of New York, has this to say in regard to foreign trade:

Within four years New York has jumped from fourth and third place among the world's great ports to second. As she is outrunning London in population so is she soon to take her place at the head of the list as the greatest port.

Her tonnage is to that of London 9,053,906 to 10,179,028. New York's tonnage is one-third of that entered in all the ports of the country.

Half the foreign trade of the country is here. The port's foreign trade for the year ending on June 30 last amounted to \$1,328,548,417. The gain for the port was more than \$35,000,000. In twenty-five years her trade should be at least as much larger by 75 per cent.

The completion of the Panama Canal within the range of a quarter of a century's vision should double her foreign commerce. The harbor is a drama of fascinating commotion, color, sounds and shapes.

IMPORTANT DIPLOMATIC CHANGES.

The United States was the first nation to acknowledge the sovereignty of Japan in Korea. During the latter part of November it was announced that the United States Envoy Extraordinary and Minister Plenipotentiary to Korea, Mr. Edwin V. Morgan, had been withdrawn. This action was taken upon receipt by the State Department of official information from the Japanese Government to the effect that that Government had established a protectorate over Korea, and in the future all diplomatic business concerning Korea would be conducted at Tokio. The treaty of amity and commerce between the United States and Korea will not be affected. The consular officers in Korea will remain as at present.

Just as this action had been taken by the United States Government a vacancy was caused in the office of American Minister to Cuba, and Mr. Morgan was immediately appointed to it. Because of his attitude in the Isle of Pines incident following his persistent opposition to the Anglo-Cuban treaty, Mr. Herbert G. Squires aroused a sentiment against him in Cuba which resulted in the lodgment of a complaint against him. At the same time he cabled his resignation, which was quickly accepted, and Mr. Morgan assigned to succeed him.

POCKET KNIFE TOOL KIT.

A man who is at all handy with tools will appreciate the "Napanoch" pocket knife tool kit, which has been recently placed on the market by U. J. Ulery. It is shown in the accompanying cut, and consists of a sturdy knife with a single blade, but at



the opposite end of the handle is a pin on which may be quickly fixed in place for use any of five very useful tools, which can be put to effective use in an emergency. The knife blade has a length of $3\frac{7}{8}$ inches. The adjustable tools comprise a reamer 3 inches long, a 4-inch file, a saw of the same size, a chisel and a screwdriver. The tools are stowed away in a leather bag, $4\frac{1}{2}$ inches long, $3\frac{3}{4}$ inches wide and $\frac{3}{4}$ of an inch thick, making a very convenient case, easily carried in the pocket.

The tools are secured in place in an instant, and as quickly separated from the handle. Each tool is supplied with a hook extension at the butt end, and this fits over the pin in the knife handle when the two are held at right angles. A turn of the wrist locks the two parts in position for use.

THE SELECTION OF ELECTRICAL MACHINERY.

The art of making efficient and durable dynamos for generating electric currents and motors for utilizing such currents would seem at first thought to be so well developed that machines made by one concern could reasonably be expected to be as good as those made by any other. It would seem that the art must have been reduced to such an exact science that it would not be possible for one make of machine to excel another to any great extent, but such is not the case.

Electrical machinery is very apt to be judged by the rating given to it by the makers and not by its actual capacity. For instance, some makers rate their motors more according to the electrical horse-power required to drive them rather than the amount of useful power that the machines will actually deliver at the pulleys, and their dynamos are rated at an output that is the utmost that the machine can deliver under most favorable conditions, whereas they should be so rated that an overload of 25 per cent. for short periods could be taken care of without trouble or the least damage to the machine.

In selecting a machine first determine what the normal working capacity must be; if a motor the number of horse-power, if a dynamo the number of lights required and their candle power, or, better still, state, if possible, the volts and amperes required. If it is not possible to state the exact output in electrical terms, write to your dealer and state fully just what you desire to do and leave the selection of the proper size of dynamo to him.

Second, determine whether a high or slow speed machine is best suited to your requirements. In case of a motor consider the speed and size of the pulley on the shaft or machine to be driven, and if these elements are fixed so that they cannot be changed, select a high or low speed motor according to requirements. If not limited by existing conditions use your own judgment in the matter.

In case of a dynamo the same methods will apply in the reverse direction; that is, if the speed and size of the pulley that is to drive the dynamo are fixed then the dynamo must be selected to suit.

Before leaving this point it is well to say that a high-speed electrical machine is usually more efficient (i. e., it will do more useful work in proportion to the total energy used to drive it); it is smaller, lighter, and, last, but not least, is much cheaper in price than slow-speed apparatus of the same output. These are very important points and should be carefully considered.

Third, dynamos and motors are made in two types, "open" and "enclosed." "Enclosed" machines are only necessary where they cannot be protected from water or grit and dirt in the air. They are very popular on account of their symmetrical outlines. However, their efficiency in small sizes is apt to be lower and the price much higher than that of a well-designed open machine of the same size.

A more serious objection to the enclosed machine is that while it is supposed to be protected from all dirt, it will soon get dirty enough inside, and the dirt and waste oil from the bearings are very apt to burn out and cause serious trouble

unless the machine is thoroughly cleaned from time to time, and right there is where the trouble comes, as the great majority of those machines are not get-at-able for cleaning, so they usually go without it till the machine gives up.

Open machines, especially in the hands of the ordinary user, are to be preferred, because every part of them is instantly accessible; the machine can be kept perfectly clean. It is simpler, more efficient, will carry greater overloads, and will cost much less than the enclosed.

Fourth, a good dynamo or motor of any type should be thoroughly substantial, have a large shaft with armature keyed to it, brush holders and carbon brushes that will not need attention, self-oiling, self-aligning bearings, adjustable rocker arm, and should be so made that all parts are interchangeable.

A most vital point is the winding and insulation of field and armature, where the main difference between a good and worthless machine is to be found, but the difference does not always show on the surface. The field coil should be wound in even layers throughout, but in inferior winding many times the amount of wire is wound at random, as fast as it can be put on, until the spool is nearly full, when a piece of cardboard is put on and one layer of wire wound over it merely to present a nice finish. Such winding is apt to cause "short circuit" and cannot be efficient.

The armature winding is often done at piece-rate prices so low that the work cannot be done well, and the work is usually covered up with a canvas covering at each end. Do not buy a machine with a bandage on its head, because there is apt to be something wrong beneath. A properly wound armature will show the wires at the ends carefully laid and all coils separated from each other by linen tape. The armature will not be "dry wound," but will be varnished at the ends as each successive coil is laid on. After winding the armature should be thoroughly insulated with a good insulating varnish and thoroughly baked. The insulating process will, if properly done, render it absolutely proof against oil and water, and make a job that is not liable to "break down" under any treatment.

In conclusion it should be said that the above remarks are intended to apply to direct current machines only, but to a certain extent will also apply to alternating current machinery. In corresponding with manufacturers about apparatus it is always well to state plainly whether direct or alternating current machinery is wanted, and also to give any other specifications or conditions that may appear necessary.

The Philippine Railways.

On December 15 the bids are to be opened for the Philippine railway grants, amounting to 1,000 miles of road in various parts of the archipelago. The bids will be opened in Washington and in Manila on the same day. It is believed that three or four bids for the whole system will be submitted at the offices of the Bureau of Insular Affairs in Washington. It is announced that Mr. Milotor, a well-known railroad engineer, has been appointed as the Government's supervising engineer for these lines of railways. Mr. Milotor takes the position originally intended for Mr. John F. Stevens, who has been appointed chief engineer of the Panama Canal.

THE PRESIDENT'S MESSAGE.

The message of President Roosevelt contained several references to vital affairs concerning our relations with our own possessions abroad and with foreign countries. Of the Panama Canal, he said that the matter of feasibility and route had been determined, but, the President continues, "the point which remains unsettled is the question of type, whether the canal shall be one of several locks above sea level or at sea level with a single tide lock. On this point I hope to lay before the Congress at an early day the findings of the Advisory Board of American and European Engineers, that at my invitation have been considering the subject, together with the report of the commission thereon, and such comments thereon or recommendations in reference thereto as may seem necessary.

"The American people is pledged to the speediest possible construction of a canal adequate to meet the demands which the commerce of the world will make upon it, and I appeal most earnestly to the Congress to aid in the fulfillment of the pledge."

Taking up the Philippines, Mr. Roosevelt says the islands are slowly recovering from the series of disasters which have so greatly reduced their agricultural products. Conditions and progress in the islands are given at length, and it is stated that disturbances have all been suppressed. On the Philippine tariff question the President says:

"The agricultural conditions of the islands enforce more strongly than ever the argument in favor of reducing the tariff on the products of the Philippine Islands entering the United States. I earnestly recommend that the tariff now imposed by the Dingley bill upon the products of the Philippine Islands be entirely removed, except the tariff on sugar and tobacco, and that that tariff be reduced to 25 per cent. of the present rates under the Dingley Act; that after July 1, 1909, the tariff upon tobacco and sugar produced in the Philippine Islands be entirely removed, and that free trade between the islands and the United States in the products of each country then be provided for by law.

"A statute in force, enacted April 15, 1904, suspends the operation of the coastwise laws of the United States upon the trade between the Philippine Islands and the United States until July 1, 1906. I earnestly recommend that this suspension be postponed until July 1, 1909.

"I do not anticipate that free trade between the islands and the United States will produce a revolution in the sugar and tobacco production of the Philippine Islands.

"The enactment of a law by the Congress of the United States making provision for free trade between the islands and the United States, however, will be of great importance from a political and sentimental standpoint, and while its actual benefit has doubtless been exaggerated by the people of the islands, they will accept this measure of justice as an indication that the people of the United States are anxious to aid the people of the Philippine Islands in every way, and especially in the agricultural development of their archipelago. It will aid the Filipinos without injuring interests in America.

"In the effort to carry out the policy of excluding Chinese laborers, Chinese coolies, grave injustice and wrong have

been done by this nation to the people of China, and, therefore, ultimately to this nation itself. Chinese students, business and professional men of all kinds—not only merchants, but bankers, doctors, manufacturers, professors, travelers and the like—should be encouraged to come here, and treated on precisely the same footing that we treat students, business men, travelers and the like of other nations.

"Our laws and treaties should be framed not so as to put these people in the excepted classes, but to state that we will admit all Chinese except Chinese of the coolie class, Chinese skilled or unskilled laborers. There would not be the least danger that any such provision would result in any relaxation of the law about laborers. These will, under all conditions, be kept out absolutely.

"As a people we have talked much of the open door in China, and we expect, and quite rightly intend to insist upon, justice being shown us by the Chinese. But we cannot expect to receive equity unless we do equity. We cannot ask the Chinese to do to us what we are unwilling to do to them."

THE BOYCOTT'S FAILURE.

In view of the recent attempt to boycott American goods in China, there is considerable consolation to be obtained from the most recent figures of the condition of the American export business to the Celestial Kingdom, for while the business for the month of October has fallen behind that of the same month of the previous year, yet it is far ahead of October of any other year, and for the ten months ending with October, 1905, the figures are far in advance of those for any similar period. In the single month of October, 1905, the very latest measure of our trade with China, the value of our total exports to that country was \$3,138,645, against \$3,846,803 in October, 1904; \$1,324,535 in October, 1903; \$1,634,864 in October, 1902; \$1,399,607 in October, 1901, and \$579,005 in October, 1900. Thus the October, 1905, exports to China from the United States are larger than in any other October except that of 1904, and more than twice as large as the average October since 1900.

Exports from the United States to China in the ten months ending with October, 1905, are more than twice as great as in the corresponding period of any preceding year in the history of our commerce, and in the month of October, 1905, for which the Department of Commerce through its Bureau of Statistics has just announced the figures, the total was larger than in any preceding October with the single exception of October, 1904. The total value of merchandise exported from the United States to China in the ten months ending with October, 1905, was \$50,104,767, against \$20,557,184 in the corresponding ten months of 1904, which up to that time was the high record year in our export trade with China.

In cotton cloths, which form more than one-half of total value of our exports to China at the present time, the quantity exported in October, 1905, was 29,828,023 yards, a larger total than in any preceding October in the history of our trade with China, with the single exception of October, 1904, when the total was 43,343,533 yards. During the ten-month period ending with October the quantity of cotton cloths exported from the United States to China in 1905 by far exceeds that of the corresponding months of any preceding year. The total quantity

of cotton cloth exported to China from the United States in the ten months ending with October, 1905, was 451,000,000 yards, against 171,000,000 in the corresponding period of 1904; 177,000,000 in the corresponding months of 1903, and 299,000,000 in the same months of 1902, which was the high record figure prior to the present year. The total value of exports to China from the United States in the ten months ending with October is more than twice as great as in the corresponding months of any earlier year, and four times as great as the average of that period during the last decade.

A comparison of our exports to China in 1905 with those of 1895 shows a remarkable increase. In the single month of October, 1895, the value of our exports to China was \$266,117, against \$3,138,645 in October, 1905, and for the ten months ending with October, 1895, our exports to China amounted to \$2,834,803, against \$50,104,767 in the ten months ending with October, 1905. In no year prior to 1895 had our exports to China reached the \$10,000,000 line, while in the fiscal year 1905 they passed the \$50,000,000 line, and for the calendar year which ends with next month will also exceed \$50,000,000.

Of flour, the value of our exports to China in the ten months ending with October, 1905, amounted to \$333,002, as against \$170,644 in the corresponding months of last year. Large quantities of flour destined for the markets of China go to Hongkong and are credited to that port in our export statements, which show that the value of flour exported to Hongkong in the ten months ending with October, 1905, was \$2,070,726, as against \$4,053,733 in the same months of 1904.

GROWING BUSINESS WITH OUR OUTLYING TERRITORY.

The commerce of the United States with its noncontiguous territory in 1905 seems likely to exceed by many million dollars that of any preceding year. The nine-month statement ending with September, issued by the Department of Commerce and Labor through its Bureau of Statistics, shows that the shipments from the United States to its noncontiguous territory amounted to \$36,552,174, against \$29,929,079 in the corresponding months of the preceding year, an increase of \$6,500,000, and the shipments of merchandise to the United States from its noncontiguous territory in the same period amounted to \$66,550,150, against \$47,141,638 in the corresponding months of the preceding year, a gain of over \$19,000,000. Thus the total commerce between the United States and its noncontiguous territory amounts to over \$103,000,000 in the nine months ending with September, 1905, against \$77,000,000 in the corresponding months of the preceding year.

These figures relate to merchandise only, and do not include the gold and silver, of which the shipments from Alaska to the United States were nearly \$7,000,000 of gold produced in that territory and \$5,500,000 of foreign gold shipped from Alaska, being presumably that originating in British territory adjacent thereto. This shows a total increase of over \$25,000,000 in the trade between the United States and its noncontiguous territory in the nine months just ended, as compared with the corresponding nine months of the preceding year. It was not until 1904 that the commerce between the United States and the various areas now designated as

its noncontiguous territory had reached as much as \$100,000,000, but it seems likely that the total for the present year will reach fully \$125,000,000.

This increase in the trade above referred to is found in the movements of commerce to and from each of the important areas in question, except in the single instance of merchandise shipped from Alaska to the United States. In this there is a falling off of a little less than \$2,000,000 compared with the corresponding months of the preceding year, this reduction being apparently due to a shortage in the shipments of salmon, which in the nine months of 1905 amounted to but 17,500,000 pounds against 39,000,000 in the corresponding nine months of the preceding year, the value being \$2,000,000 less than that of the corresponding months of 1904. In shipments from the United States there was an increase of nearly \$2,000,000 to Alaska, of over \$3,000,000 to Porto Rico, about \$1,000,000 to the Philippine Islands, and nearly \$1,000,000 to the Hawaiian Islands. In shipments from the noncontiguous territory to the United States there was an increase of about \$5,000,000 from Porto Rico, of over \$4,000,000 from the Philippine Islands, and of about \$12,000,000 from the Hawaiian Islands, but a decrease, as above mentioned, of about \$2,000,000 from Alaska, due apparently to a shortage in salmon shipments during the period in question.

The contrast in the trade of the United States with these territories as compared with the period prior to annexation is interesting. In the nine months ending September, 1897, the year prior to the annexation of Porto Rico, the shipments of merchandise from that island to the United States amounted to \$1,767,028, as against \$16,176,676 in the nine months just ended. The shipments from the Hawaiian Islands to the United States in the nine months ending with September, 1897, amounted to \$13,044,231, as against \$35,689,791 in the nine months just ended. The shipments from the Philippine Islands to the United States in the nine months ending with September, 1897, amounted to \$3,362,060, as against \$11,792,724 in the nine months just ended. For Alaska there are no figures other than estimates for years prior to 1900. On the export side (shipments from the United States to these territories), the shipments from our own ports to Porto Rico in the nine months ending with September, 1897, were \$1,504,974, against the \$11,486,300 in the nine months ending with September of the present year; those to the Hawaiian Islands in the nine months of 1897 were \$3,766,268, against \$8,968,049 in the corresponding months of the present year, and those to the Philippine Islands in the nine months of 1897, \$54,660, against \$4,482,537 for the nine months of the present year. In addition to the above, there are small shipments to and from the smaller islands—Guam, Midway, Tutuila, etc. To Tutuila during the nine months ending with September, 1905, the shipments were \$58,296; to the Midway Islands, \$7,859.

As to the character of the articles entering into this trade with the noncontiguous territory of the United States, which promises to amount to \$125,000,000 during the present year, it may be said that the chief item of shipments from the Hawaiian Islands is sugar, which amounted in that period to \$33,113,471 of raw sugar and \$1,752,791 of refined. This trade in shipments of refined sugar from Hawaii to the United States is quite new and aggregated in the nine months of 1905, 33,136,858 pounds.

PHILIPPINE FREE TRADE.

Col. Clarence R. Edwards, Chief of the Bureau of Insular Affairs, who accompanied Secretary Taft on his recent tour to the Far East, has made a report in which he points out that there should be practically free trade between the Philippine Islands and the United States. Colonel Edwards, who is one of the most capable officers of the Army and specially familiar with Philippine affairs, expresses the opinion that this policy cannot be fully carried out before 1909, on account of the fact that the treaty with Spain gives to that country the same rights in the Philippine Islands that we take for ourselves.

In the present issue of the AMERICAN EXPORTER will be found the views on this subject of one of the prominent Congressmen who also accompanied Secretary Taft to the Philippines. This latter thinks that American manufactured articles may be admitted into the islands free, or practically free, of duty without waiting for the expiration of the agreement with Spain.

It will be remembered that at the last session of Congress a tariff bill was favorably reported removing all duties on imports from the Philippines, except those on sugar and tobacco, and reducing these to 25 per cent. of the present rates. The vote in the committee was nine in favor and only one opposed, despite the strongest efforts of the beet sugar and domestic tobacco interests.

In his report Colonel Edwards hopes that the opposition may now be either withdrawn or prove ineffective. He points out that the danger of a large increase in the sugar and tobacco crops of the Philippines is very slight, and that the competition with the producers of the United States cannot be formidable.

In connection herewith it may be mentioned that on December 1 an amendment to the shipping bill, designed to further the Philippine trade, was adopted by the Merchant Marine Commission. It postpones until 1909, in accordance with Secretary Taft's recommendation, the date when the carrying trade between the United States and the Philippines shall be confined exclusively to American vessels, and in the interim provides for the payment of a subvention of \$6.50 per gross ton to all American vessels engaged in the trade between the archipelago and the United States. This is an increase of 30 per cent. over the general rate for American ships in foreign trade, and it is thought by the commission that the provision will have a marked and beneficial effect on Philippine commerce. It applies to both the Atlantic and Pacific coasts.

SMALL ISOLATED LIGHT AND POWER PLANTS.

Small isolated electric lighting plants are becoming very popular for factories and places remote from electric supply. Heretofore the difficulty has been to secure reliable apparatus in the shape of complete outfit, consisting of everything required for a working installation, at a price that would warrant the expense, but it is now possible to get a most satisfactory equipment at a very reasonable figure.

The Elbridge Electrical Manufacturing Company, of Elbridge, N. Y., is making a specialty of these complete plants

from one to forty lights of 16 candle power each, or more, and in the printed matter distributed by the company gives very complete lists of everything used, and the company undertakes to arrange as complete outfits all necessary apparatus and fixtures.

Both open and enclosed dynamos from one to forty lights, and motors from $\frac{1}{8}$ to 3 horse-power are built. All machines have very rigid construction, self-aligning, self-oiling bearings, large commutators, reaction carbon brush holders, and oil and water proof insulation in both field and armature. The machines are built for high, medium and slow speeds. The company also manufactures a line of demonstrating apparatus for school and experimental work, complete systems for electric ignition for gasoline or vapor engines. It has a corps of experts in the different departments and a well equipped factory.

HONORS FOR AN AMERICAN WINDMILL.

It is always a source of satisfaction to hear of a tribute to an American product being made by some foreign nation. A very important testimonial was recently made to the windmill of the Gould, Shapley & Muir Company, Limited, of Brantford, Canada, and while this is not a product of the United States it is so familiar in this country that we can almost take the credit to ourselves. The honor referred to was in the shape of an award from the Royal Agricultural Society of England after a severe test. The diagram which the Royal Agricultural Society published, giving the result of the tests, shows that the mill referred to pumped 92 per cent. more water than the mill which was awarded the second prize, both mills being of the same size.

The particular mechanism of this mill, which is a great factor in producing this excellent result, is composed of an internal gear or yoke, and is termed in the Royal Agricultural Society's description "a mangle action." This rack is guided between four steel rollers, and at which either end of the stroke engages a cam cast on the pinion which revolves inside of the yoke and carries the yoke up and down, representing the stroke of the mill. The rack is guided between four steel rollers, to insure the even working of the pinion in the rack, and in addition is provided with a steel guide plate working against a flanged roller to keep it properly in mesh. The longest distance away from the centre is $1\frac{3}{4}$ inches, and this distance is not increased if the length of the stroke is; for example, the stroke on a 16-foot mill is 24 inches, and by having the long, steady stroke a steady stream of water is secured through the pipes when the mill is in motion, and it also obviates the necessity of opening and closing of the valves of the pump as often as with a shorter stroke.

The result of the Royal Agricultural Society's investigations, as given in their publication, states that this mill was given the first prize on account of its general excellence of design, its efficiency as determined by the amount of water pumped, its successful governing qualities, the arrangement for the automatic application of the brake, its economy in upkeep, due to the slow motion of its moving parts, and its general good workmanship, and last, but not least, its reasonable price.

TRADE LITERATURE.

The latest booklet issued by the firm of Gillinder & Co., No. 135 Oxford street Philadelphia, Pa., deals with the line of incandescent globe shades known as the Franklin double refracting electrics made by the firm. There are many different designs and sizes, and the little book gives the details of each.

The Ideal Concrete Machinery Company, of South Bend, Ind., has recently issued an instructive and entertaining bunch of literature pertaining to the block-making machinery made by that concern. This includes a book by Spencer B. Newberry on the subject of concrete construction, and also a number of half-tone illustrations demonstrating the various styles of concrete blocks and the manner of making most effective use of them.

A book of 142 pages has been issued by the Jeffrey Manufacturing Company, of Columbus, Ohio, devoted entirely to the Jeffrey coal-handling machinery for mines. There are fine half-tones on every page, as well as diagrams demonstrating the use of this firm's machinery. This is known as Catalogue No. 20, while Bulletin No. 10, which has also just made its appearance, treats of locomotives and motors used in mines.

The Westinghouse Standard engine, which is one of the oldest products of the Westinghouse Company, of East Pittsburg, Pa., is fully treated in a thirty-five page catalogue just issued by that company. The company builds other engines, some of which represent lower cost while others are more economical, but despite this fact the Standard has a field of its own and is in constant demand. Because of its peculiar construction the Standard lends itself to use in locations where it is exposed to weather, dust and corrosive fumes, as, for instance, rock-crushing plants, brick works, cement works, gas works and in driving mechanical stokers. The Standard has a reputation for long runs, one of them having established a record for a continuous operation of thirteen months and eight days.

The Billings & Spencer Company, of Hartford, Conn., has issued a perpetual calendar which is of novel design, making use of paper clips moving along the edge of a stiff card to indicate the days of the week and month. The back of the card contains an alphabetical list of all the different products of the company.

A leaflet issued by the Gisholt Machine Company, of Madison, Wis., and Warren, Pa., has illustrated descriptions of electrically-driven lathes made by the company, and which have some new features.

The Wollensack Optical Company, of Rochester, N. Y., is sending out a booklet describing lenses and shutters, and containing samples of the work done by these instruments.

The different types of the Regal gasoline engines are described in a catalogue just issued from the office of the com-

pany at Coldwater, Mich. There are several types of vertical, horizontal and marine engines treated in the book.

The Golding Jobber, a printing press which is made by the Golding Manufacturing Company, of Boston, Mass., is described at length in an attractive booklet just issued by that company. The book itself is a specimen of the work of this press.

The current issue of the *Pigeon Hole*, published monthly by the Peerless Electric Company, of Warren, Ohio, is devoted to several illustrations of electric-driven laundry machinery. A recent development is a Peerless motor direct attached to an extractor, which a number of the foremost manufacturers of laundry machinery have been prompt to adopt. Peerless high-frequency alternating current generators for laboratory use have been ordered by Cornell University. The State University of Iowa has placed orders for laboratory transformers and motors, and the Massachusetts Institute of Technology has given an additional order for Peerless machines.

The Southern Plow Company, of Columbus, Ga., has just issued a handsome catalogue of 102 pages, devoted to the company's product, which consists principally of plows, but also includes harrows, scrapers, cultivators, cotton planters, cane mills and parts.

Lippincott's Gazetteer Revised.—The great gazetteer of Lippincott's, which has been recognized as the standard for fifty years, has been so completely revised that it is practically a new publication. It has retained its old shape and general appearance, but is a new book from cover to cover. The men who are responsible for the new edition are Prof. Angelo Heilprin, of Yale, and his brother Louis, the former being recognized as one of the foremost geographers, while the other shines as a student of history, a strong combination for the purpose of preparing such a book as this. The book is brought right up to date and seems to be complete in every detail, covering all of the rapid changes which have taken place within the last decade. The period referred to has been a remarkably active one. The conquests of war and peace have been far reaching in their results, and the transformations which have taken place on the earth's surface have been complete and rapid. Our store of knowledge about the polar regions has been increased by many important and well-planned expeditions, while the discovery of gold in the Alaska country has resulted in the springing up of many towns now of imposing proportions where less than a generation ago no foot had trodden. Other agencies which have been the means of working similar changes have been the construction of the Trans-Siberian Railroad and expeditions into India and Africa.

Many of the new localities opened up have already assumed industrial and commercial importance, and it will be readily seen that the latest authority on geographical matter will be of immense service about the office and establishment of any concern engaging in international business.

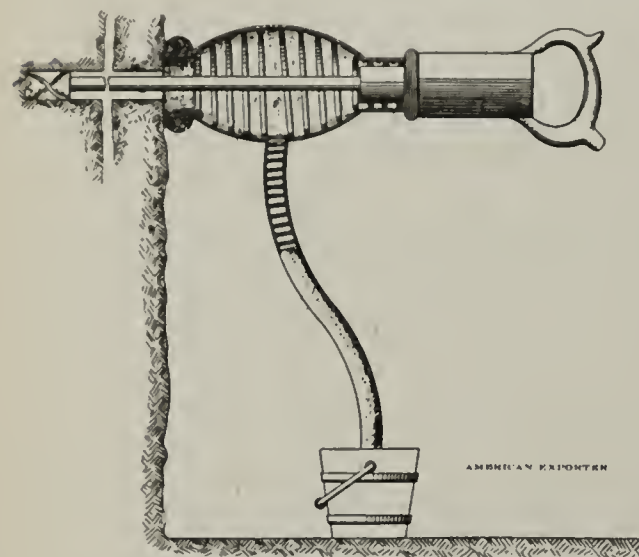
The book contains over two thousand words, is of quarto size and is bound in sheep. J. B. Lippincott Company, of Philadelphia, is the publisher.

NEWEST AMERICAN INVENTIONS.

SUPPRESSION OF DUST FROM DRILLS.

The one disadvantage about the use of pneumatic drills for mining purposes is the dust which arises therefrom. This is not only a great inconvenience but a positive menace to the lives of the workmen. These fine particles are carried off by the air and find lodgment in the lungs of the workmen, causing a disease

known as miners' phthisis. Many efforts have been made to combat this. It was successfully overcome to a great extent in the boring of the Simplon tunnel, when special devices were designed to keep down the dust.



A new scheme in this line has been worked out by Lee M. Parrett, of Butte, Mont., who has been recently granted a patent on the device.

The new invention comprises a body portion and a discharge tube for the dust. The body portion is of substantially ovoidal form, provided at its inner end with a cylindrical neck, adapted to receive the outer end of the pneumatic hammer. The said body portion, together with its neck, may be made of any suitable fabric, and the same is kept distended, and its shape is preserved by a coiled spring, which is placed therein and extends from end to end thereof. At the outer end of the body portion, through which the drill, reamer, or other tool extends, is secured an annular packing element, which may be made of any suitable material and which is sufficiently elastic to bear closely against the rock which is being drilled or reamed, so as to effect an air-tight connection between the body portion of the arrester and the rock, which air-tight connection is maintained by the pressure of the operator against the outer end of the pneumatic hammer or drill.

The discharge tube is provided with an interior wire spring coil to prevent it from collapsing. When the pneumatic drill or tool is in operation, the lower end of the discharge tube is submerged in water in a bucket or other vessel, such as indicated.

FISHING MADE EASIER.

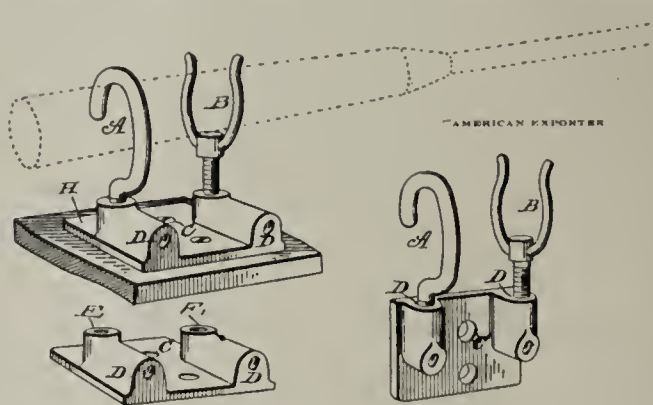
Fishing is generally regarded as the easiest of all the occupations or pastimes. Those given to more active employment are apt to regard fishing as a less offensive name for loafing. Notwithstanding that a very trifling amount of energy is required in the operation of sitting on a wharf or in a boat with a line wrapped around one finger, yet at the same time a great deal of gray matter has been expended in the effort to further reduce the amount of physical effort of fishing by the introduction of mechanical devices of one kind or another.

Probably the most successful device of this character is the

contrivance of a piece of wire, one end sharpened to a point and a small bell fastened to the other. Midway is a loop by which the line is secured. The operator sits comfortably anywhere within hearing distance, and as the fish hooks himself he conveniently rings the bell, is hauled up and taken off.

The invention shown herewith has relation to a device for holding fishing rods, the objects in view being to provide a holder for the above purpose capable of being easily adjusted to

and removed from a relatively fixed support and to receive and support in a removable manner and at any desired adjustment a

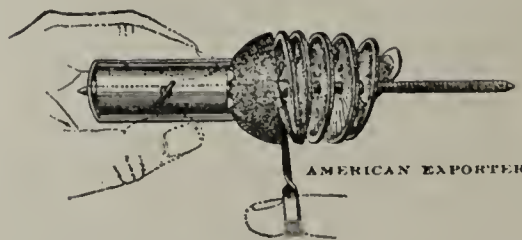


fishing rod. When the curved seat member A is in the form of a screw hook and both said curved seat member and forked clamp B are threaded into the apertures at E, if the base plate H is to be placed horizontally or into the apertures at D when it is desired to attach the base plate vertically, the device having been secured to a relatively fixed support by means of ordinary screws, as shown, if the curved seat member A is so turned as to project rearwardly from the base plate the pole may then be laterally inserted, the hook be given a quarter turn, when the pole is brought in alinement with the forked clamp B, in and upon which it rests. The weight of the forward part of the rod will tilt the whole rod in such a way as to cause it to be securely held in the curved seat member and the forked clamp.

IN A SINGLE SLICE.

There is an endless variety of vegetable and fruit slicers in the market. There is hardly a hardware or house furnishing store in the United States which cannot show at least a dozen of these devices. Generally speaking, therefore, the fruit slicer is no novelty either at home or abroad, but the one shown herewith has a feature which calls for some special attention. This lies in the fact that it reduces the fruit or vegetable to a single slice at one operation. The device comprises a threaded rod or pin on which

the vegetable or fruit is impaled, and a knife adapted to be revolved spirally around the rod. The handle which carries the rod is formed with prongs which pierce



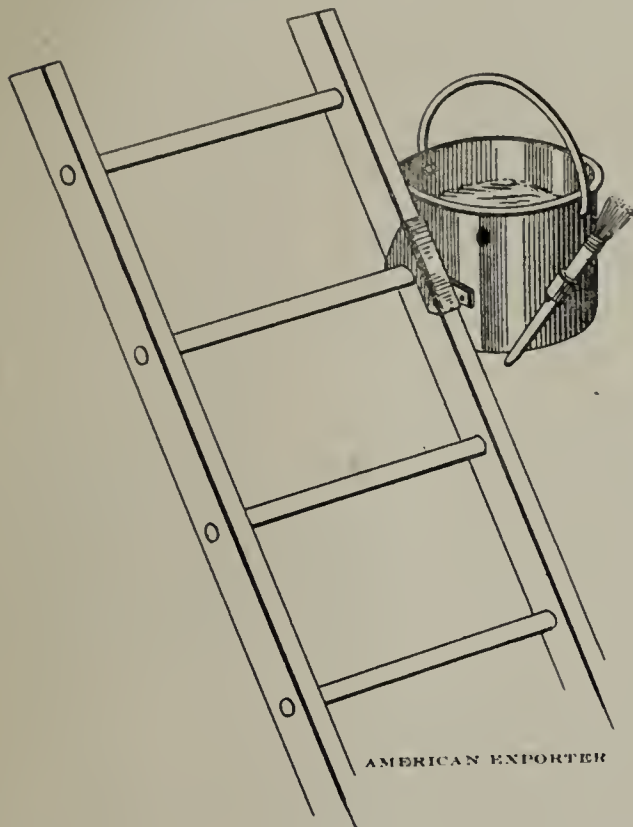
the end of the fruit and prevent it from turning on the rod, while it is being sliced. In addition to the prongs the handle carries a pair of spring arms formed with jaws at their outer ends which assist in holding the fruit during the slicing operation. A nut is threaded onto the rod and carries the knife. The device is held in the hand, and by pressing the finger against the finger piece at the outer end of the knife, the latter is revolved about the rod; but owing to the thread on the nut and rod, the knife is advanced

in spiral direction cutting the fruit into a continuous spiral ribbon.

If it is desired to have the slice in the shape of smaller pieces, this can be effected by drawing a knife through the length of the fruit, either before or after the passage of the revolving blade through it.

BRACKET FOR THE PAINT POT.

The painter working on a ladder is often at a loss for a place to hang the bucket containing the paint, and considerable time is consumed by the workman in making provision for his paint

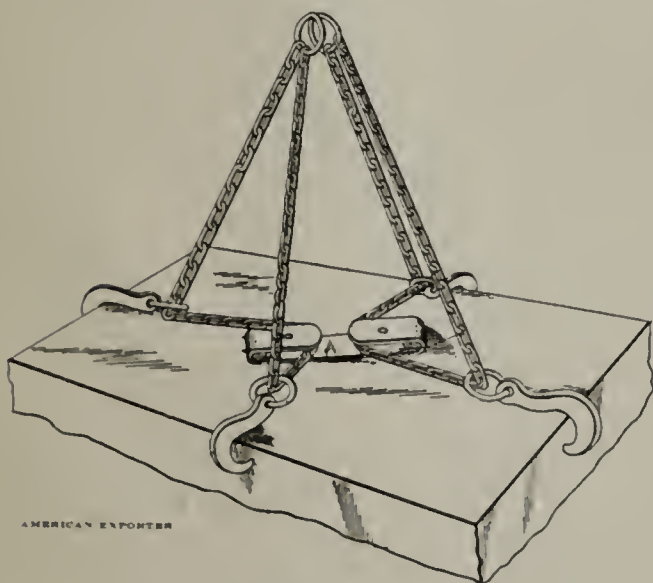


supply. A new can, with a feature which permits of its being hung in a secure position at any point along the length of the ladder, has been recently patented. Secured to the vessel is an attaching member of such a shape as to repose over the side bars of the ladder when the latter is reposing at an angle, the normal position

when in use. One of the rounds of the ladder acts as a seat for the whole device, and it is a very simple matter to change the location of the paint pot from one point to another as the work progresses.

HOOK FOR HOISTING STONE.

In the elevation of large building-stones it has been the practice to employ a gripping device that is fastened to the two sides of the stone, and in many instances when the grip is not placed in proper engagement with the stone the same swings or tilts, causing the grip to become detached from the stone, permit-

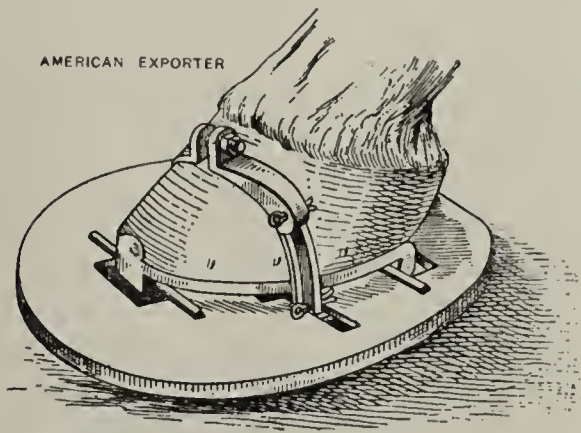


ting it to fall and break. Sometimes a cable is placed around the large stones after they have been partly elevated, this cable being employed to equally balance the stone, whereby it can be safely moved to a desired point. This operation

requires time and considerable labor, and the object of a recently patented device is to entirely obviate the danger heretofore experienced in elevating large stones by providing means for gripping the stone upon four sides. This is shown in the accompanying cut. The inventor employs two chains, both ends of which are secured to a ring adapted to be secured on the end of a hoisting cable, whereby the chains may be elevated. Upon each of the chains are mounted two gripping hooks. In connection with the chains and their appurtenant parts, the inventor employs a double pulley. This is placed upon the top of the stone, and that portion of the chain between the links is placed in engagement with the double pulley, the chain engaging the pulley. By adjustably connecting the chains together by the double pulley the chains and gripping-hooks can be adjusted to different sizes of stones.

HORSESHOE FOR SOFT GROUND.

For a horse engaged drawing lawn trimming implements over well-kept swards, great leather shoes or, more properly speaking, boots have been devised which, presenting a broad surface, prevent the animal's feet from sinking into the ground and thereby damaging the surface. A set of these boots represents a



considerable outlay of money, and at the same time their usefulness is quite limited, as they are available for the one purpose only. A very simple shoe of this type has been devised recently, which is at the

same time more generally useful, for it is reversible, one side being smooth and therefore suitable for work on the lawn in summer time, while the other side is for wear when the snow is on the ground. The shoe consists of a plate with a flange projecting from one face along the periphery and formed with slots to admit the calks of a horseshoe. Ribs on the plate prevent the calks from sliding back and forth on the plate. At each side a T-slot is formed to admit the head of a clamping strap. The two straps are bolted together over the hoof of the horse, as shown. One of the straps is formed of two members which are adjustably connected by means of a pin. This permits of adapting the shoe to different sizes of hoofs.

Improvement in Towel Holders.—The Locke towel holder is a new device for holding a towel which is in use, and it is said to be an improvement in many ways on the roller and other forms of holders which are more or less generally resorted to at present. The Locke holder is a piece of spring wire with clips at each end which are designed to seize the towel at two corners of one end and thus hold it in an extended position. The advantage of this is that after use the towel readily dries because the entire surface is exposed to the action of the air, whereas when the towel is thrown over a hook or laid down in a mass the drying operation is very slow, with the result that the towel becomes mouldy and stained before it has become soiled from use.

NEWS OF THE EXPORT TRADE.

Accessions to the Great Lakes Fleet.—There are twenty-two large vessels under way at the shipyards along the Great Lakes for delivery during the coming year. To this list must be added twenty-one ships that were under order at the beginning of the year, having a carrying capacity of from 8,000 to 10,000 tons, making a total of forty-three ships which will be ready for next year's business, with a carrying capacity on a single trip of 397,500 tons, or, in an average season of twenty trips, of 7,950,000 gross tons of ore. With the single exception of one steamer of 6,500 tons these twenty-two new vessels are of the larger class, four of them capable of carrying 8,000 tons, three 9,000 tons, two 9,500 tons and twelve 10,000 tons and over.

Shipments of American Oil.—American petroleum production in 1904 was 117,063,421 barrels, according to the latest Geological Survey figures. The value of the petroleum marketed here was \$101,170,466. These figures show a gain over 1903 of 16,662,894 barrels and \$6,476,416 in value. The German oil tank steamer *Phoebus* sailed the other day from Philadelphia with 2,643,159 gallons, the largest and most valuable single cargo of oil ever shipped from the Quaker City port.

Musical Instruments in Japan.—A report from Yokohama is to the effect that there is a growing demand in Japan for pianos, which are chiefly supplied by the United States, Great Britain and Germany. American pianos are now to be found in the homes of many wealthy Japanese in all the larger cities of the Mikado's Empire.

The Automobile Trade.—During the year 1904 Great Britain imported automobiles to the value of \$10,402,200, while the exports from Great Britain amounted only to \$2,000,000. On the other hand France exported automobiles to the value of \$14,260,000 and imported automobiles only to the amount of \$727,000. The exports of German automobiles amounted to \$3,134,000, as compared with \$1,843,000 of imports. The exports of automobiles from the United States during the same period amounted to \$1,997,000 and the imports to \$1,446,000.

Pacific Coast Lumber Shipments.—According to statistics compiled by the *West Coast and Puget Sound Lumberman* for October, foreign shipments of lumber by seven Puget Sound mills in September amounted to 12,080,537 feet, besides 544,825 laths. The shipments went to Japan, China, Australia, Chile, New Zealand, Peru, England, Brazil, Guatemala and other countries, several of which have immense forests of their own.

Suspenders Sent Abroad.—The C. A. Edgarton Manufacturing Company, of Shirley, Mass., report an unusual increase during the past few months in their foreign orders for President suspenders. They state that while every mail brings substantial orders from foreign buyers, the record for export orders received in any one day was made October 30, when in that day's mail were found satisfactory orders from each of the following countries: Japan, Australia, Belgium, Sweden, Panama, India and Germany.

American Candles for South Africa.—Because of the great number of mining camps in South Africa, the consumption of candles in that country is very great, and despite the customs preferences in favor of the British product, the American candle has in the past few years achieved a great popularity. The shipment of English candles a few years ago represented about 15½ per cent. of the total, while it has now declined to less than 12 per cent., and in the meantime the imports of American candles have grown to nearly one-quarter of the total.

Sewing Machine Companies Merged.—The Singer Sewing Machine Company, which has worked up a great export business all over the world, has absorbed the Wheeler & Wilson Company. It is announced that Samuel H. Wheeler will retire from the presidency of the latter company at the ending of the year and the Singer Company will take charge of the entire business of the Wheeler & Wilson Company.

Bath Tiles for Australia.—Ten carloads of bath tiles were recently shipped from Zanesville, Ohio, to Australia.

New Shipyard on the Great Lakes.—The business of the Great Lakes has reached unprecedented proportions, and as a result a great many shipyard enlargements and extensions are announced. What is practically a new concern is the Toledo Shipbuilding Company, which was recently organized and which has acquired the Craig yard at Detroit, Mich. This plant will be made one of the largest and most complete on the Great Lakes, and will turn out some large vessels.

Color Markings for Freight.—A recent issue of the *British South African and Export Gazette* says the Union-Castle Steamship Company has adopted a system of color markings for packages by which their destination will be indicated by a streak of paint. This innovation has been successful in greatly facilitating the movement of merchandise at ports. The Port Elizabeth Harbor Board now proposes to adopt a somewhat similar scheme for in-transit shipments, and is endeavoring to enlist the interest of similar port organizations and steamship companies.

Ten Months' Export Business.—Our exports for the ten months ending October of domestic products amounted to \$604,000,000, an increase of \$45,000,000 over the same period of last calendar year. There was \$27,000,000 increase in breadstuffs, \$14,000,000 increase in provisions, \$7,500,000 increase in raw cotton, less \$2,000,000 decrease in cattle, hogs and sheep, and also \$2,000,000 decrease in mineral oils.

Twenty-five Million Dollar Steel Plant.—The statement has been made and not denied by the officers of the United States Steel Corporation that work is about to be commenced on the greatest steel plant in the world. It is said that \$25,000,000 will be spent in the erection and equipment of the new plant, and that it will be the largest in the world. It will be located on the shore of Lake Michigan, not far from South Chicago. About 20,000 employees will be required to operate the plant.



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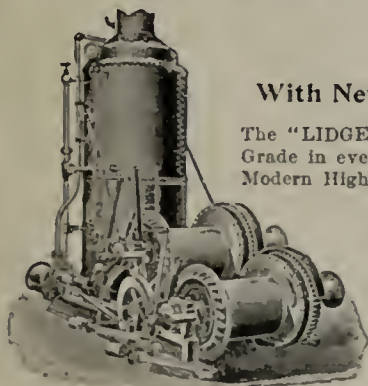
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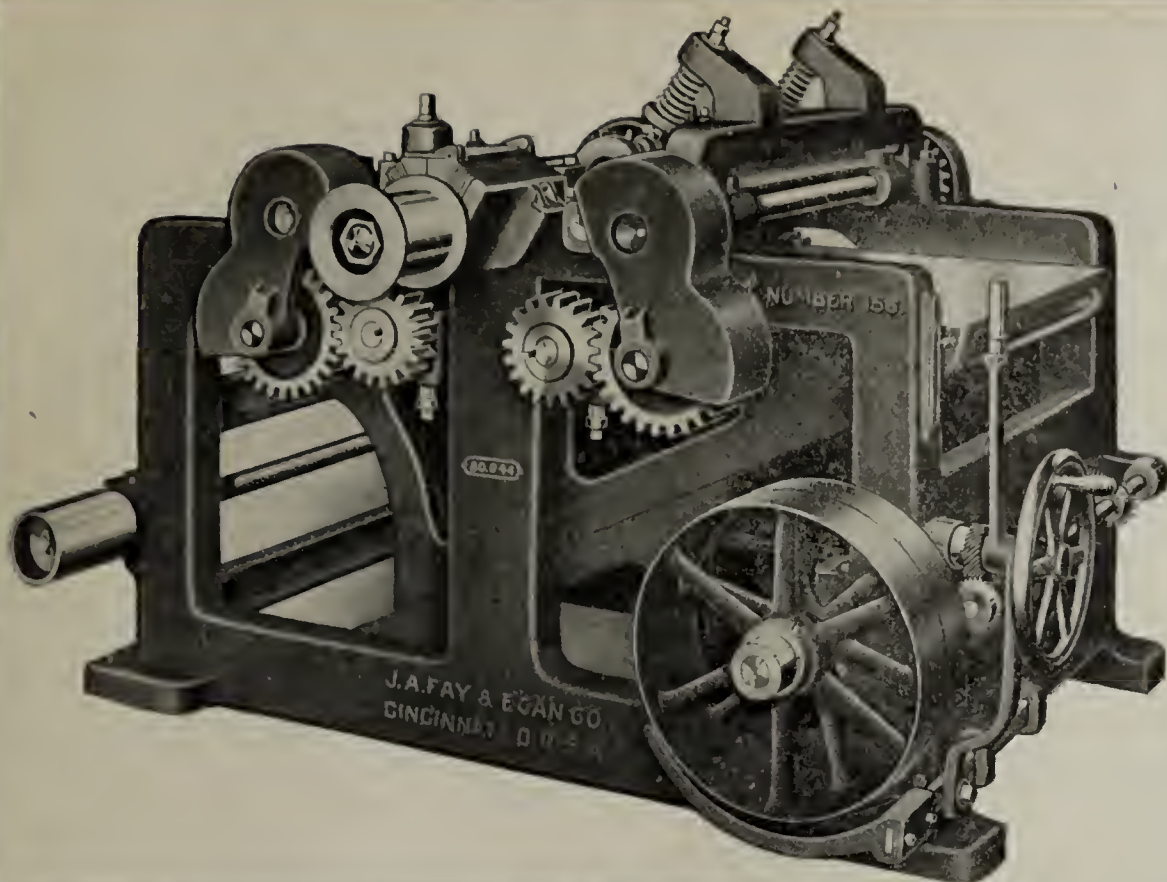
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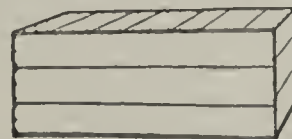
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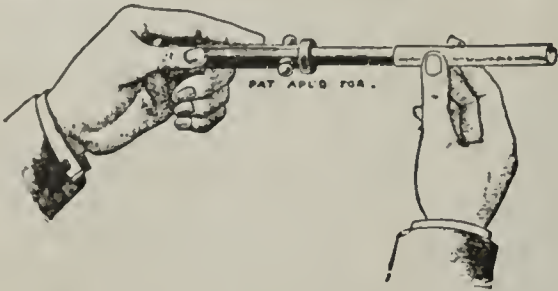


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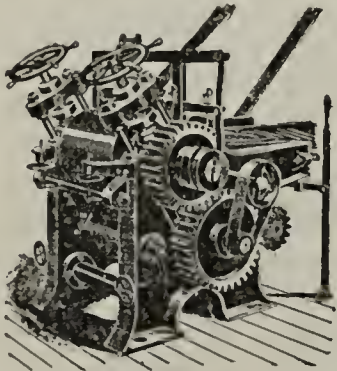
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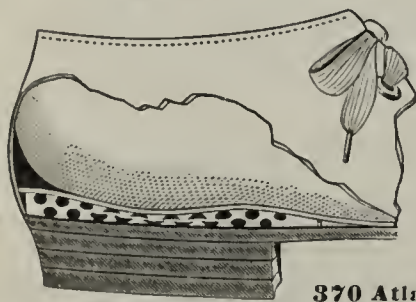
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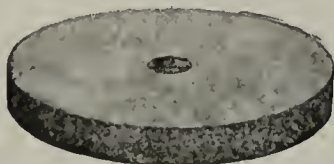
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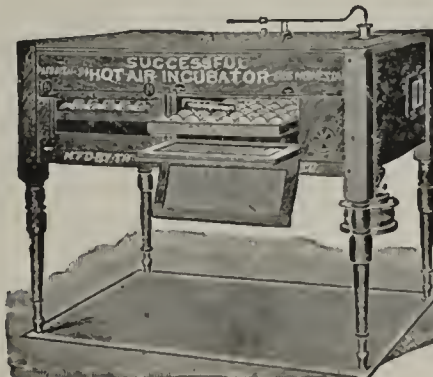


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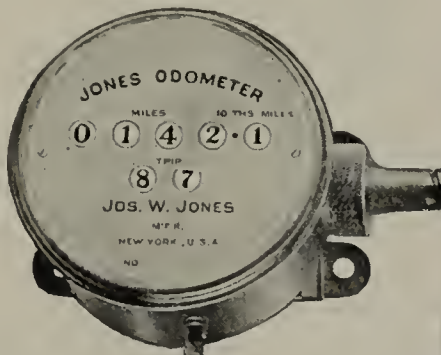
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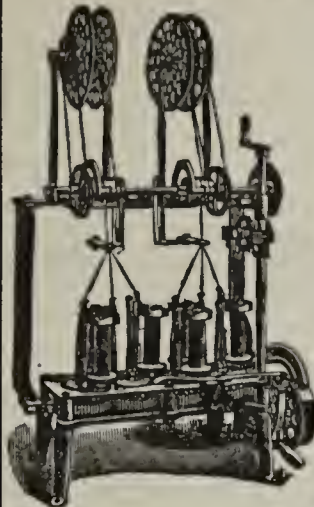


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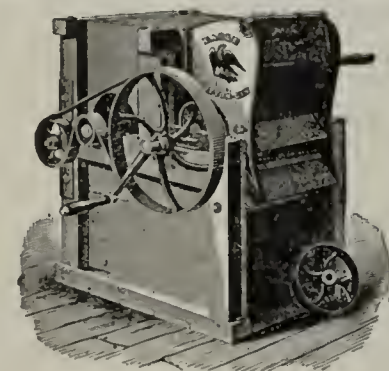
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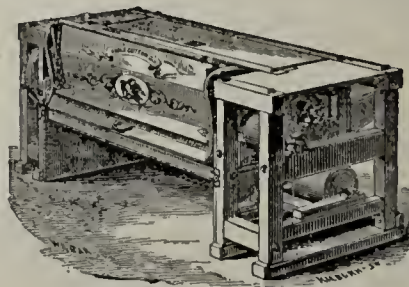


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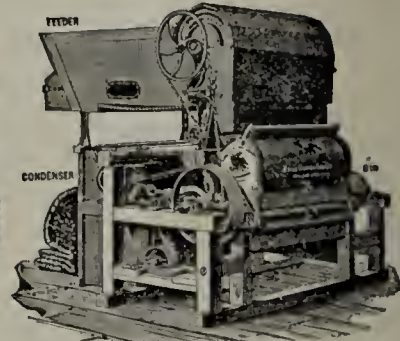
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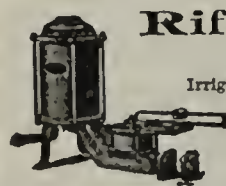


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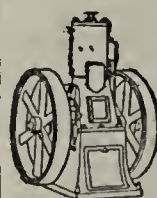
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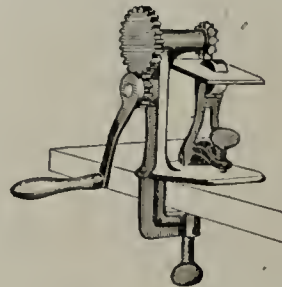
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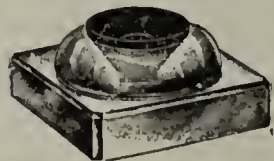
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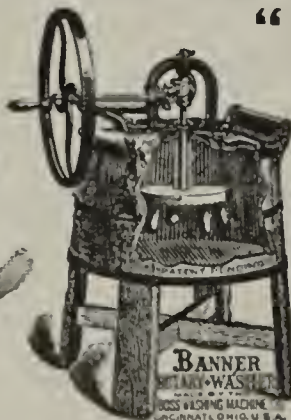
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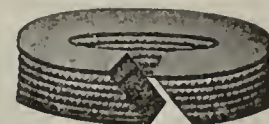
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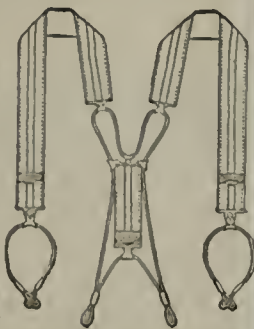
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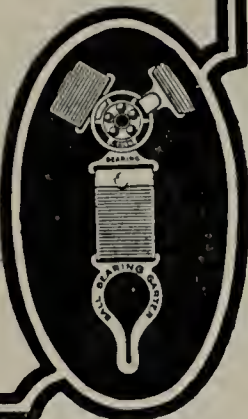
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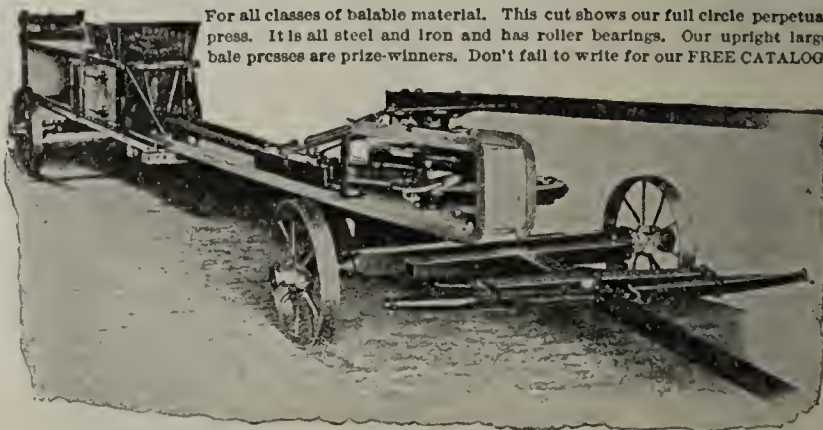
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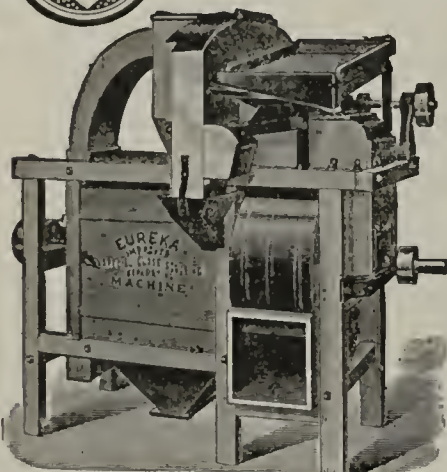
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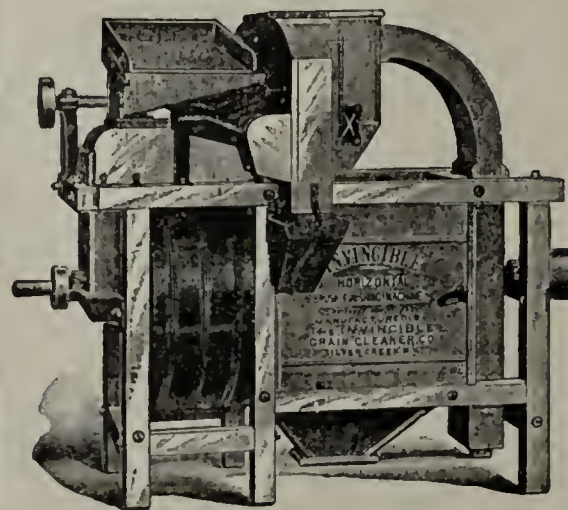
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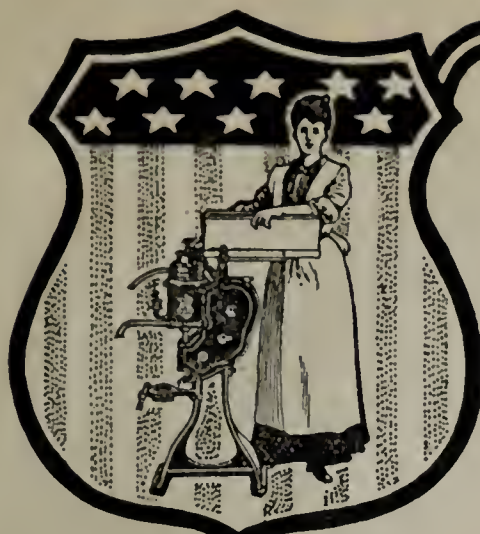
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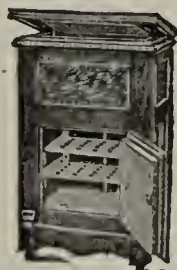
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The above prices are made especially for the foreign introduction of this useful invention. A sample order of any of the above-named quantities will demonstrate the exceptional merits of the comb. A good supply of advertising matter sent free with each order. Sole agencies extended to reliable firms, and orders executed either direct or through export commission houses. Correspondence solicited.

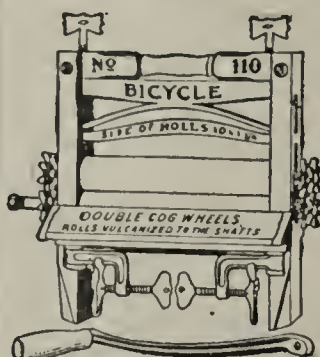
THE DR. VAUX CO., EXPORT DEPT., 862 Broadway, New York, U. S. A.

LOVELL MFG. CO., Erie, Pa., U. S. A.

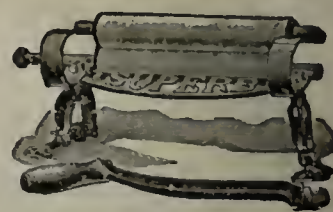
Export Department: 54 Warren St., New York.

Manufacturers of a full line of

Anchor Brand Clothes Wringers, Rat and Mouse Traps



Send for
Catalogue
and
Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.



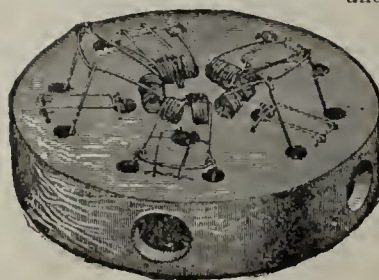
Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."

Catalogue of Wringers in English only and of Rat and Mouse Traps in both English and Spanish



Lovell's Easy-Setting Wood Mouse Trap. Lovell's Easy-Setting Metallic Mouse Trap.

EAGLE MOP WRINGERS AND BUCKETS COMBINED



Are used in homes, public buildings, hotels, barrooms, barber shops, stores, churches, schools, clubrooms, office buildings, railroad stations and everywhere mopping up or washing is done.

DIRECTIONS FOR OPERATING:

Put left foot on foothold to hold pall stationary, the other foot on lever; press lever down and rolls will close tightly together; pull mop straight out. Pressure obtained from 0 to 200 pounds, as may be required.

Send for Catalogue.

Eagle Cooperage Works, Sole Manufacturers and Patentees, Circleville, O., U. S. A.

Aluminum Smokeless Oil Heaters

Equipped with Safety Burner.

**SPECIAL
\$35.00
OFFER
FOR FOREIGN
MARKETS:**

Upon receipt of \$35.00 in U. S. Gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29 $\frac{1}{2}$.



- No. 1—Brass burner; removable fount; 8-in. circular wick; height (ball down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular wick; height (ball down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (ball down), 28 inches.

OUR SAFETY BURNER. Note Construction.



- A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances.

The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

Metal Stamping Co., Jackson, Mich., U. S. A.

PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3



American Novelties

NOVELTY (SELF-CLOSING)
INKSTAND No. 1 (large),
retail, - 75 Cents

NOVELTY (SELF-CLOSING)
INKSTAND No. 3 (small),
retail, - 35 Cents

PATENTED SPECIALTIES FOR EXPORT.

All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

WHOLESALE PRICE LIST.

Novelty Paper Fastener, \$4 doz.; Keystone Paper Fastener, \$6 doz.; Original Paper Fastener, \$12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 80c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, \$1.50 doz.; B B C Paper Clip, \$1.50 doz.; Balancing Board Clip, \$2, \$2.25, \$2.50 doz.; Upright Paper Clip, \$1.50 doz.; Accumulator Bill File, \$1.50 doz.; Standard Pen Rack, 1.75 doz.; Spring Folding Pen Rack, \$2 doz.; Combination Paper Weight and Clip, \$4 doz.; Pocketbook Postage Stamp Holder, \$1 doz.; Automatic Fountain Penholder, \$1.50 doz.; Novelty Inkstand No. 1, \$6 doz.; Novelty Inkstand No. 3, \$3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, \$4 doz.; Novelty Hunting Knife, \$8 doz.; Novelty Pocket Screw Driver, \$4 doz.; Artist's Rotary Kit, \$5 doz.; Self-locking Door Indicator, \$2.50 doz.; Madame Louie Hair Crimper, \$2.50 great gross; Novelty Stitched Hair Crimper, \$1.50 great gross; Automatic Flasher, \$1.50 doz.; Automatic Towel Holder, \$1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, \$4.80 doz.; Keyring Door Securer, \$1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., \$1.25 and \$1.75 doz.; The Masticator, \$1.75 doz.; Duplex Can Opener, 80c. doz.; Universal Wardrobe Shelf Bracket, \$1.50 doz.; Double Match Box, Bracket, \$2 doz.; Universal Washer Cutter, \$8 doz.; Novelty Pen Puller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

In communicating with advertisers, kindly mention the American Exporter.



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Recognized wherever used as the standard of perfection. They are clean to handle, do not smut or soil the work, are long lasting and are made from the best colors. These goods are in big demand wherever introduced. We have a special offer to dealers that it will pay you to write us about. Orders received through any New York exporting house at export rate.

INDELIBA MFG. CO., INC.,
ROCHESTER, N. Y., U. S. A.



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Catalog

IMPORTERS

We can offer you the exclusive agency for our "Kee Lox" hard, clean, non-grease carbons in your country, and we call your special attention to the fact that these carbons possess such superior merit that we know they are just what you have been looking for.

These carbons represent a quality so superior to anything that has ever been shown on your market that you will not only be able to compete with, but will be in position to actually take business away from other concerns handling any other carbon on earth.

"Kee Lox" non-grease typewriter ribbons and carbon papers have revolutionized the American market, because they can be handled without soiling the fingers and used without smutting the work during operation. In addition, they possess all the other desirable features of such goods, as we have not sacrificed a single quality to obtain these results.

Furthermore, the "Kee Lox" carbons improve with age, so that the longer they are kept in stock the better they become. Hence, they can be imported in large quantities at one time without risk of loss in deterioration of quality.

Samples and further information, together with our proposition, will be gladly furnished on application to the

Kee Lox Manufacturing Company,

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"They Sound Different"

BELL BRAND
STEEL and WOUND
Musical Strings.

For Violin, Guitar, Mandolin,
Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

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WE ARE THE
ORIGINAL MANUFACTURERS
OF

**CLEAN, NON-SMUTTING
CARBON PAPER.**

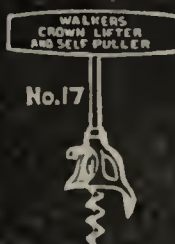
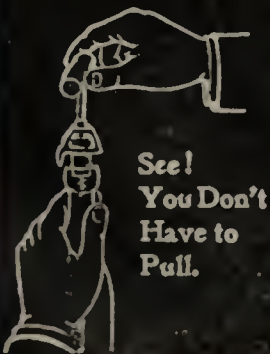
We offer you, in the Eagle Brand Onion Skin Finish Carbon, a Paper which is just as clean to handle as a sheet of white paper; yet it has all the strength of impression and durability of the old-style grease carbon. A combination which has taken many years to perfect.

We manufacture 136 different styles of Carbon Paper to fit any requirement. Orders accepted through any reliable export house or direct if satisfactory credit rating should be established. Samples and price-lists furnished to reliable importers on application.

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ERIE SPECIALTY CO., ERIE, PA., U.S.A.



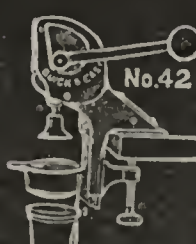
17. Self-Pulling
Cork Screw.



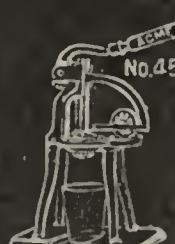
23. Quick and Easy
Cork Puller.



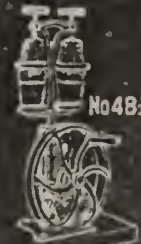
28 Samson
Cork Puller.



42. Quick and Easy
Lemon Squeezer.



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BEAUTIFULLY LOCATED.

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Automatic and Positive Feed

Punches EXACT amount CLEAN THROUGH check.
Simple and durable.

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Net Weight about 4 pounds.

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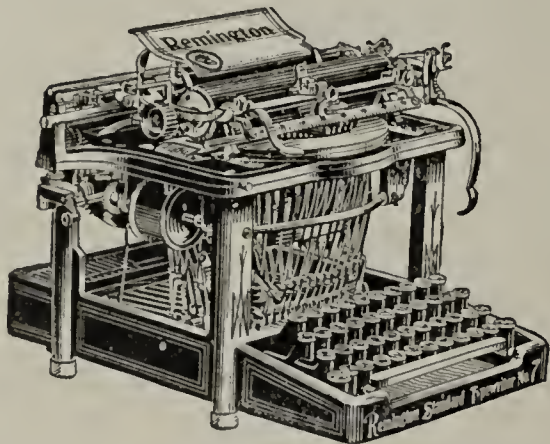
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HAND



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OF ALL MAKES

AT WHOLESALE

THE MOST COMPLETE LINE OF REMODELED AND REBUILT MACHINES EVER OFFERED THE TRADE.

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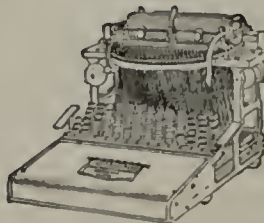
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RIBBONS, CARBONS, and TYPEWRITER LINEN PAPERS

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NASHUA TILL CO.

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The drawer is made with OAK OR BLACK WALNUT FRONT, varnished and polished. The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17 x 18 in.



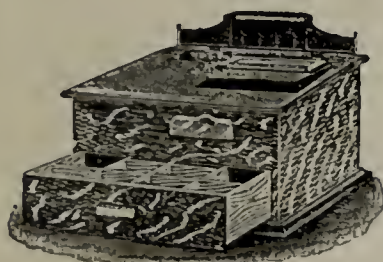
Style No. 2

The Lock Has 32 Combinations,

which can be changed instantly, and CANNOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. THE ALARM does not sound except when an attempt is made to open the drawer by an unauthorized person.

This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

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No. 85.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

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IRVING'S TRICK, GAME AND FORTUNE TELLING TOP

The most unique novelty to date, absolutely new and original; possessing a greater variety of interesting, amusing and instructive features than any half dozen novelties ever invented. A regular WIZARD for entertainment.

Artistic in design, mechanically perfect in construction, practically indestructible. Operated by a child. Spins on either end five minutes. Can be handled while in motion. Performs any number of interesting tricks. Tells fortunes. An unlimited number of games are possible with it. Has no equal in the toy line. Is practically two Tops, one within the other. Inner Top, with an arrow point cast in the face, is made to revolve on a steel spindle, independently of the outer Top, said arrow point serving as an indicator against the numbers on the flange.

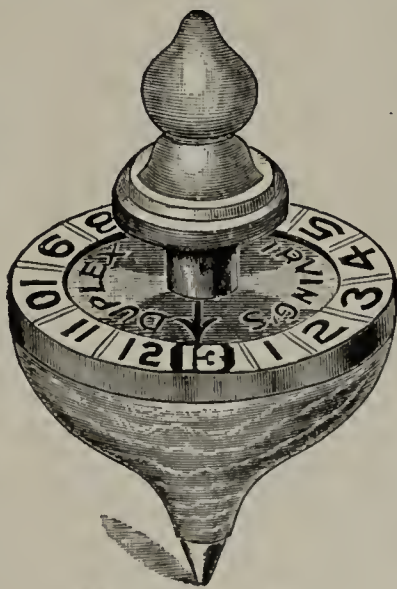
A child can spin this Top four different ways. Finished in four attractive colors. Is outselling any Top ever put upon the American market.

SPECIAL EXPORT INTRODUCTION OFFER

Upon receipt of \$9.00 in U. S. Gold, or its equivalent, we will box and deliver f. o. b. New York City, one gross of this Top. Weight boxed, 30 lbs.; size of box, 17½x8½x8½ inches.

It's a big winner, and a trial order should be placed at once.

WIZARD NOVELTY CO., Inc., PHILADELPHIA, PA., U. S. A.



PATENT ALLOWED.
AUG. 1905

EMBROIDERY HOOPS

Made from selected light-colored hardwood, finished perfectly smooth and true in shape.

Sold in over 25,000 stores throughout America and other countries

The different style hoops are put up separately, ½ dozen solid pairs of a size in a covered package.

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The most popular Hoops on the market. Made in sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter. It's the Felt-Cushion or band around the inner hoop of the "Duchess" which holds tightly stretched light or heavy fabrics equally well, and renders slipping impossible.



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The perfect adjustable Hoops. Sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter. The Bow-Spring in the "Princess" adjusts itself to different thicknesses of material, holding the fabric firmly and without injury.



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Made in 2 sizes.

3 by 6 inches for small embroidering, especially desirable for working designs on stockings.

6 by 12 inches for drawn-work and large embroidering, having every advantage of a large 12-inch round hoop, with the convenience in handling of a small size.



Special-Select Hoops

Sizes 4, 5, 6, 7, 8, 10 and 12 inch diameter.

These are low-priced, plain round wooden Hoops, lathe-turned, very smooth and carefully fitted.

SPRING-WINDING TOPS

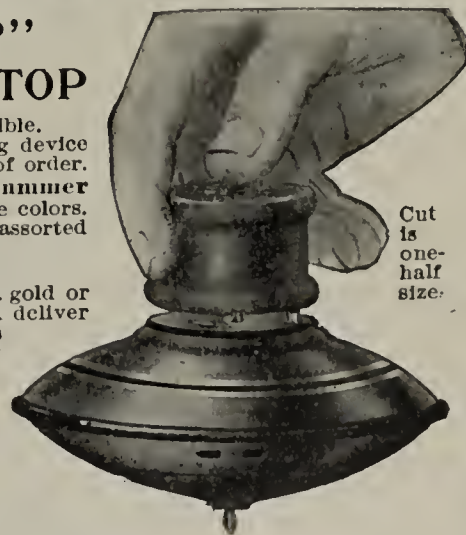
No string—just wind them up, push on the stem and away they go spinning with great force. Any child can spin them. The most popular and fascinating tops on the market. Spin the longest.

"NEVER-STOP" HUMMING TOP

Made of metal and indestructible. Spun by an automatic spring device which cannot break or get out of order. It's a Beauty and a Great Hummer. Handsomely enameled in five colors. Packed one dozen in box, assorted colors.

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Cut is one-half size.



Cut about one-half size.

THE FAMOUS SPRING-WINDING FLAG TOP

The funnest top you ever spun. Spins on either end, or in the holder, when inverted and held in the hand. These tops are ornamented with the National Flag colors of any country desired.

Mention country when ordering. Made of hardwood with metal points and beautifully finished. Packed two dozen in a box. Upon receipt of \$24 in U. S. gold or its equivalent, we will box and deliver f. o. b. New York City, 6 gross (864) Flag Tops. Weight, boxed, 100 pounds. Size of box, 4 cubic feet.

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Order direct or through any reliable exporter.

The VAN BIBBER ROLLER CO.

CINCINNATI, OHIO, U. S. A.

VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Liso").

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For ANY climate, hot or cold, can be made at once by any printer. You can make the best rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price 35c. List per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Amsinck & Co., American Trading Co. or any other responsible New York exporter.

PRINTERS' ROLLER COMPOSITION.



RUBBER STAMPS

Can be made with good profit, and without previous experience on our

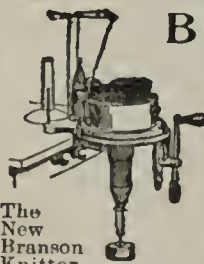
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Full Instructions with each outfit.

COMPLETE MANUFACTURING OUTFITS, \$25 TO \$100.

Send for Export Catalogue No. 1.

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For Making
KNITTED GOODS,
STOCKINGS, SOCKS
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Correspondence and Catalogues in Spanish, English and German. Will give agencies to reputable merchants. Write for circular giving full information.

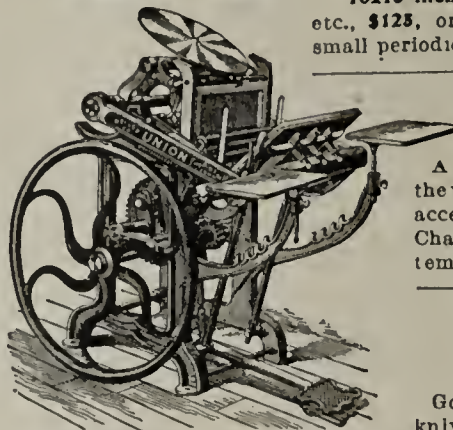


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

10x15-inch Press, with 10 styles of type, ink, etc., \$125, or with more type, rules, etc., for small periodical, \$200.

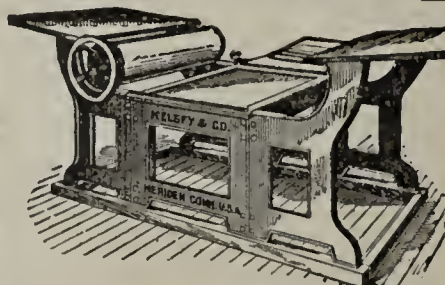


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, \$200. Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., \$400, outfit included.

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Good hand machine with 24-inch steel knives, \$12.00.



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For newspaper and large announcements. Bed, 29x43 inches. Price, \$500. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

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Safety Razor



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ALWAYS KEEN

12 Wafer Blades 24 Sharp Edges

As thin as paper, hard as flint,
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Connecting at New Orleans with

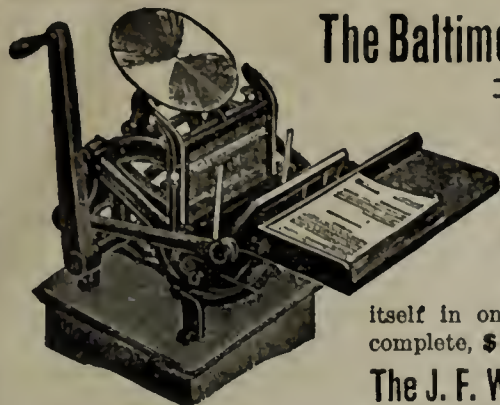
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Pacific**

Rail lines for all points in

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GRAVITY FILTER

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Each filter packed in a box, with full directions. Size, 4 1/2 inches square. Weight, 2 pounds. Sample sent by prepaid express for \$1.20, or through any New York commission house. Printed matter supplied in any language. We also make pressure filters of any capacity.

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GROVER CLEVELAND.

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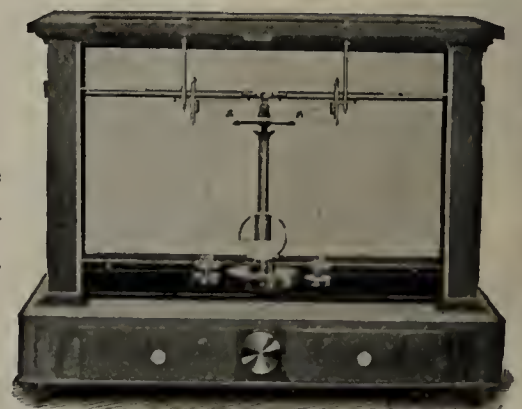
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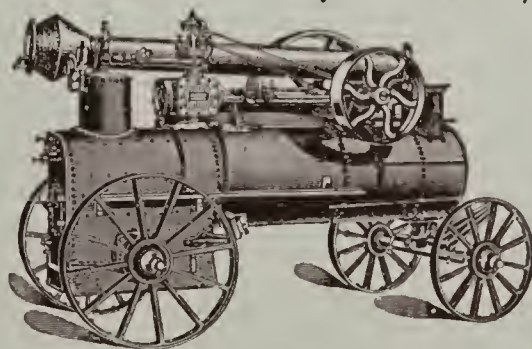
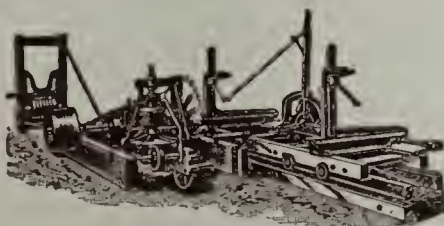
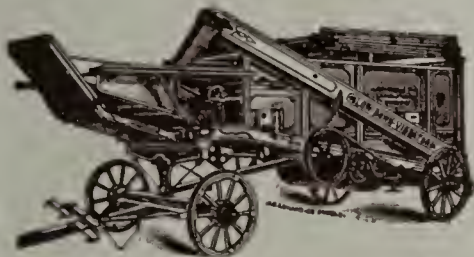
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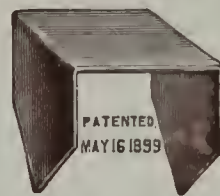
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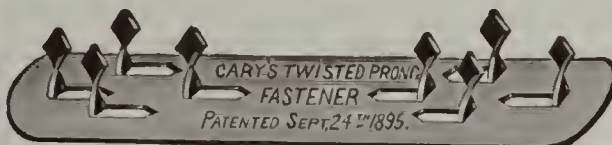
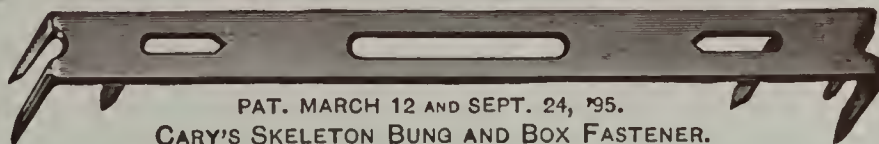
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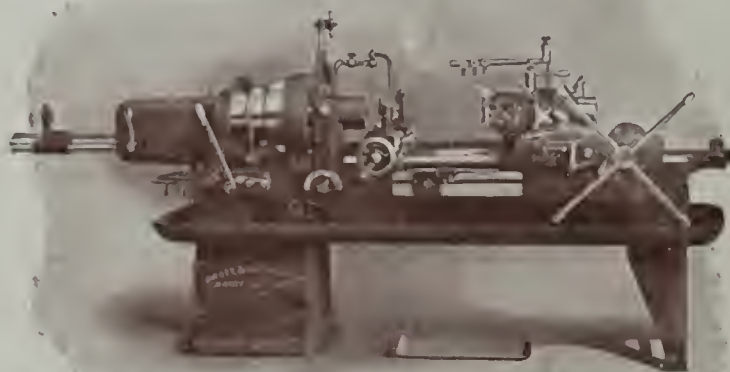
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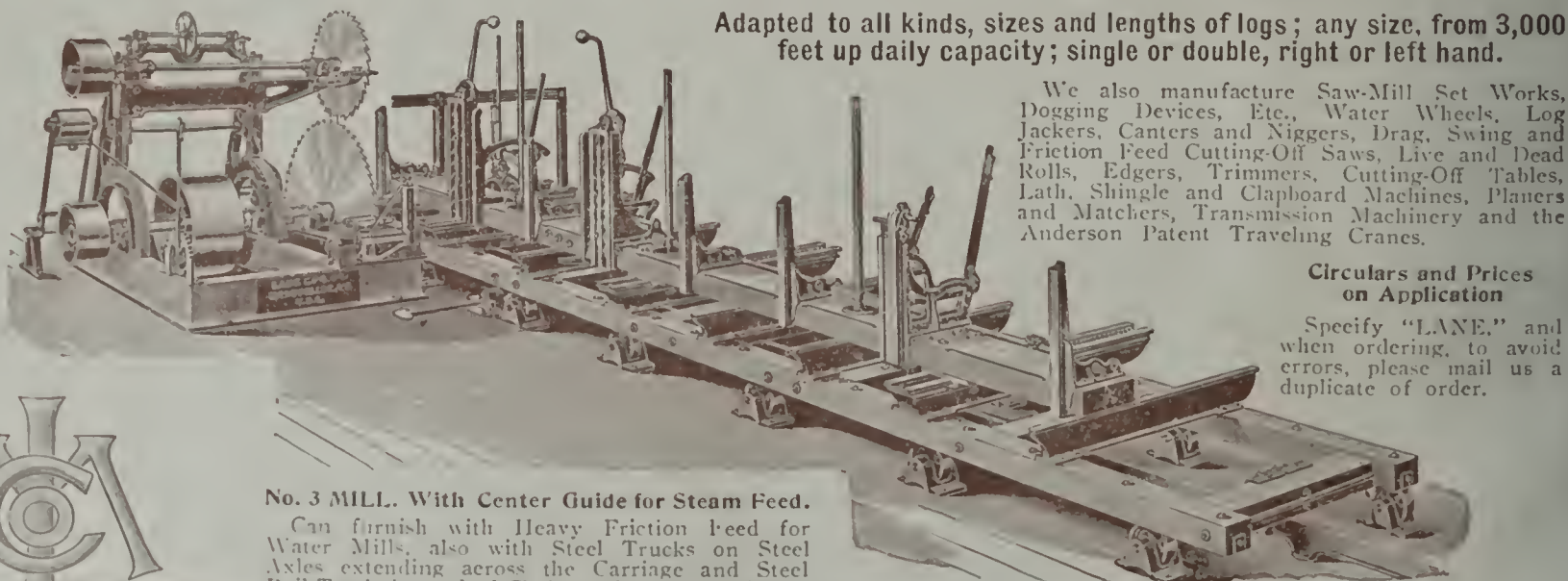
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